

Revision of the Ant Genus *Gnamptogenys* in the New World (Hymenoptera: Formicidae)

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Abstract.—Ants of the genus *Gnamptogenys* Roger in the New World are revised. The study is based mostly on worker morphology; 73 species are recognized, fifteen of which are new: *G. andina*, *G. boliviensis*, *G. brunnea*, *G. cuneiforma*, *G. ejuncida*, *G. extra*, *G. gentryi*, *G. laticephala*, *G. ilimani*, *G. nigrivitreata*, *G. pilosa*, *G. siapensis*, *G. stellae*, *G. transversa* and *G. volcano*. *G. ericae* is revalidated. In the present work sixteen names have been synonymized, and a morphological synopsis of the genus is given. The species range from southern U.S. to northern Argentina, but most are found in Central America and tropical South American forests. The evolutionary history of the genus is studied using phylogenetic systematics criteria. Six species groups are recognized: *striatula* group (22 species); *minuta* group (9 species); *rastrata* group (14 species); *sulcata* group (8 species); *mordax* group (17 species), and the *concinna* group (3 species). A key for the identification of workers is presented. Illustrations of morphological features supplement the key and descriptions.

INTRODUCTION

The genus *Gnamptogenys* Roger is a diverse group of ponerines with a distribution that covers the Neotropics, Indomalaysia and parts of the Nearctic and Australia. The genus as treated here is mostly the result of extensive synonymy by Brown (1958) in his revision of the Tribe Ectatommini. In this treatment, however, the *minuta* group species (= *Alfaria* Forel group of previous authors), are excluded and treated elsewhere (Brandão and Lattke 1990; Lattke 1992). Since Brown (1959), research on *Gnamptogenys* has consisted mostly of the description of new forms and scattered bits of ecological information. The only known fossils of the genus are two species reported from Dominican Amber by Baroni Urbani (1980). Lattke (1990) reviews the Venezuelan species and their natural history. Due to the growing number of specimens in collections, and the additional information published or accumulated in notes, a revision of the New World species seemed desirable.

MATERIALS AND METHODS

The revision is based primarily on worker morphology and the species have been defined conservatively because of considerable interpopulation variation. The criteria for judging allopatric populations as conspecific are as in Ward (1984: 131): if they are at least as dissimilar as closely related, sympatric species and are not connected by known intermediate forms. For a phylogenetic analysis, the genus *Ectatomma* Fr. Smith is used as an out-group in order to help determine the character state polarities. This genus is considered very close to *Gnamptogenys* and presents a greater number of primitive character states than either *Gnamptogenys* or *Rhytidoponera* Mayr (Lattke 1994). Species groups were determined and then compared using a character matrix (Table 1) and Farris's Hennig '86 v.1.5 phylogenetic inference program. The "ie-" option was used to generate the most parsimonious tree (Fig. 19) and a nelsen consensus

Table 1. Character state matrix

	123456789	0123456789	012345
<i>Ectatomma</i>	000000000	0000000000	000000
<i>G. haenschii</i>	110001101	0010000000	012140
<i>G. concinna</i>	100011111	1110000001	000001
<i>G. schmitti</i>	100001021	1010000011	001010
<i>strigata</i> sbsp.	010010020	0000011201	000100
<i>porcata</i> sbsp.	000010020	0000011201	000100
<i>striatula</i> sbsp.	000010020	0000011200	000100
<i>mordax</i> group	111111121	111-011102	000011
<i>sulcata</i> group	110111121	1111011122	001011
<i>rastrata</i> group	110011120	0010111202	000010
<i>minuta</i> group	100011000	0010010001	110110

tree calculated from the 13 most parsimonious trees calculated by the "ie" option. Due to logistical difficulties, it was not possible to examine some types, this is especially true for European specimens. Thus this revision depends, in such cases, upon Brown's concept of the species involved, either through examining species determined by him during the course of his studies, reading the notes he took while visiting European collections in 1963 or from his 1958 revision. When type material was examined it is followed by a "T" in the species list.

Specimens were examined from or deposited in the following collections:

- BMNH The Natural History Museum, London, U.K.
 CMLB Colección Martha Lucia Baena, Cali, Colombia
 CASC California Academy of Sciences, San Francisco, California, U.S.A.
 CFFC Colección Fernando Fernández, Bogotá, Colombia
 CKWJ Colección Klaus Werner Jaffé, Universidad Simón Bolívar, Caracas, Venezuela
 CNIC Cornell University Insect Collection, Ithaca, New York, U.S.A.
 CUNB Colección Universidad Nacional, Bogotá, Colombia
 JTLC John T. Longino Collection, Evergreen College, Olympia, Washington, U.S.A.

- LACM Los Angeles County Museum of Natural History, Los Angeles, California, U.S.A.
 LEMQ Lyman Entomological Museum, McGill University, Ste. Anne de Bellevue, Québec, Canada.
 LNKD Landessammlungen für Naturkunde, Karlsruhe, Germany
 MCZC Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.
 MHNG Muséum d'Histoire naturelle, Geneva, Switzerland.
 MIZA Museo del Instituto de Zoología Agrícola, Universidad Central de Venezuela, Maracay, Venezuela
 MUSP Museu Universidade de São Paulo, São Paulo, Brazil
 NHMW Naturhistorisches Museum, Vienna, Austria.
 PSWC Philip S. Ward Collection, University of California, Davis, California, U.S.A.
 USNM United States National Museum, Washington, D.C., U.S.A.
 WPMC William P. MacKay Collection, University of Texas, El Paso, Texas, U.S.A.

Measurements and Indices

Morphological measurements were made at magnifications of up to 100× with an ocular micrometer on a Wild M5 stereoscope. Since ratios derived from the measurements are conveniently scaled indices by themselves, the orthodox procedure of multiplying them by 100 was not followed. The measurements follow those of Lattke (1990).

- HL Head length: midline length of head proper, measured in full-face (dorsal) view, from the anterior clypeal margin to the midpoint of a line drawn across the vertexal margin.
 ML Mandibular length: length of

- closed mandibles, from the anterior or clypeal margin to the apices of the mandibles, measured in the same plane as HL.
- SL Scape length: length of the first antennal segment, excluding the neck and basal condyle.
- ED Eye Diameter: diameter of eye, measured along its long axis in lateral view
- HW Head width: maximum width of head, measured in full-face (dorsal=frontal) view, excluding the eyes.
- WL Weber's length of the mesosoma (alitrunk): diagonal length measured in lateral view, from the anterior margin of the pronotum (excluding collar) to the posterior extremity of the metapleural lobe.
- CI Cephalic index: HW/HL
- MI Mandibular index: ML/HW
- SI Scape index: SL/HW
- OI Ocular index: ED/HW
- SSC Scape setal count: the number of standing hairs (not pubescence), i.e. those forming an angle of 45° or more with the cuticular surface, visible in outline on the upper surface of the scape, with the line of view at right angles to the plane of funicular inflexion.

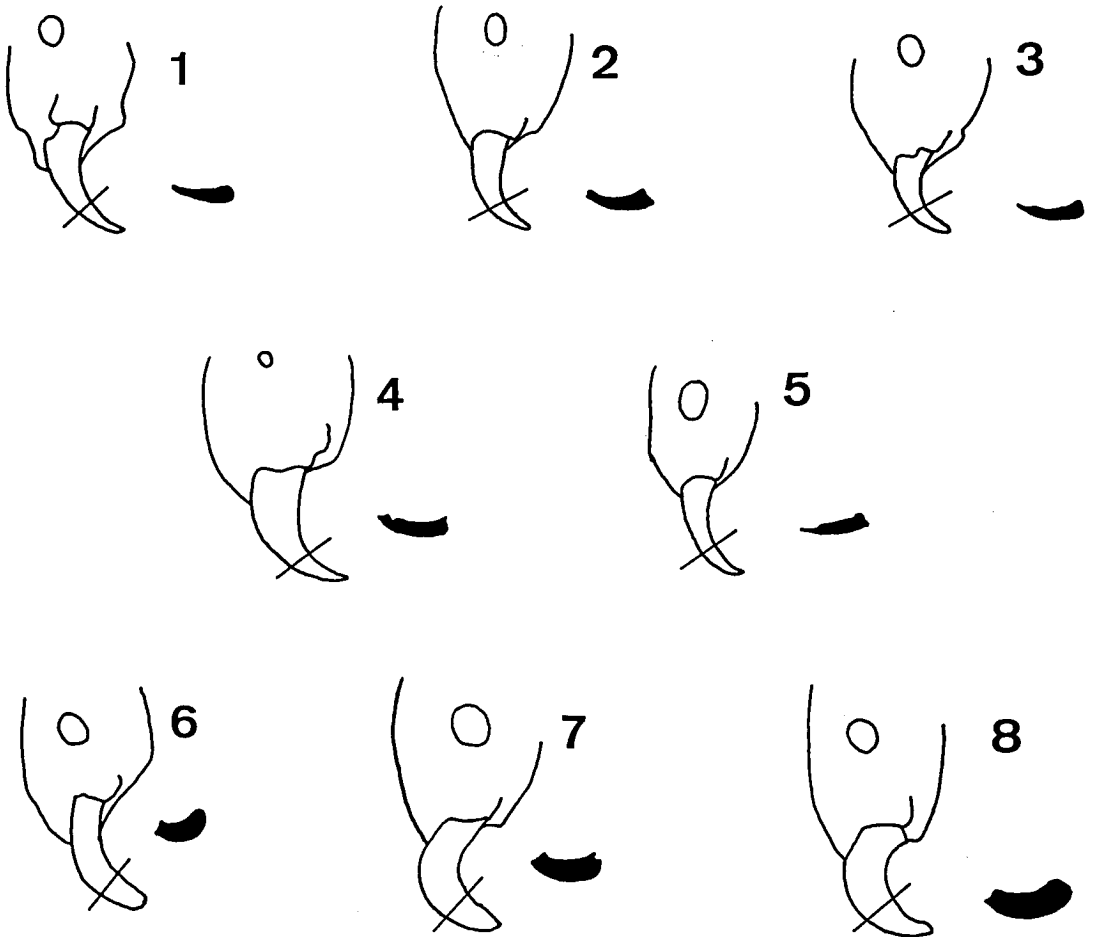
New World *Gnamptogenys* Roger

Generic Synopsis (Worker).—Sculpture consisting mostly of even parallel costae, costulae or strigae, occasionally rugose; distinct dorsomedian cephalic carinae usually absent, at most never extending more than half-way between clypeus and vertex; eyes at midlength of head or posterad, surrounded by a fine groove; lobes of frontal carinae broadly convex and partially raised, incompletely covering antennal condyles (except *minuta* group); funiculus filiform or incrassate, never with a distinct club; anterior clypeal border with narrow lamella of variable length; mesepisternum anteroventrally bordered by

narrow lamella; pronotum unarmed, without protuberances; propodeal spiracles round or slightly ovoid, never slit-like; transverse sutures and grooves on mesosomal dorsum present or absent; mesonotum never prominently convex and bulging; anterior prosternal process bidentate; anterior mesepisternal process produced as thin triangular lobe with pointed or bluntly pointed apex; metepisternum with deep posterior cleft for petiolar insertion and continuous with open metacoxal fossae; metepisternal process located anterad of cleft and of variable development; metacoxal dorsum usually with denticle, lobe or tubercle, absent in some species; helcium protruding medianly on anterior postpetiolar face; tergite of helcium much larger than sternite; foretibial apex lacking stout moveable setae; outer border of foretarsal comb (opposite calcar) usually with single prominent seta; meso- and metatibial spurs one or two (weakly developed), barbulate or simple; empoida lacking. In most species the pretarsal claws are bidentate on all legs, and the median tooth may vary in its position among species, and the claws may not necessarily be alike on all legs. In small species the claws may be hard to observe.

Malpighian tubule number six (Brown 1988). The genus is so diverse that characterizing it can be difficult. The following characters can be considered synapomorphies of the genus which distinguish it from its closest relatives: *Ectatomma* and *Rhytidoponera*: the single stout moveable seta on the foretibial apex and a spine or tubercle on the metacoxal dorsal surface. This former trait is lacking in some species. The following combination of characters are synapomorphic for the genus if one excludes the problem species discussed further on in the text: inconspicuous metanotum, disappearance of the median cephalic carina, lack of row of stout setae on foretarsal base opposite the strigil, leaving only one seta.

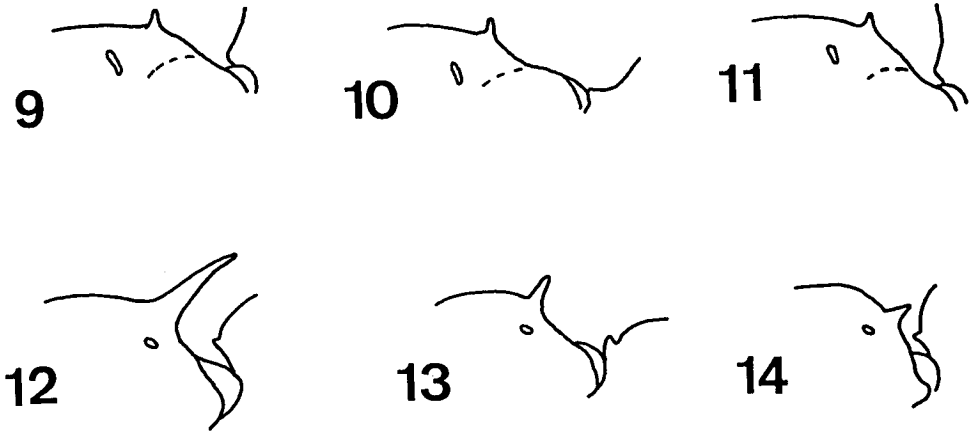
Characters.—The choice of characters for



Figs. 1-8. Lateral view of mandibles and anterior section of head of *Ectatomma* and *Gnampptogenys*. Transverse section of mandible depicted in black with chewing border to the left and frontal surface below. 1, *E. ruidum*; 2, *G. porcata*; 3, *G. moellerius*; 4, *G. haenschi*; 5, *G. triangularis*; 6, *G. mordax*; 7, *G. tortuolosa*; 8, *G. concinna*.

use is complicated by convergence in several instances. Some character states considered apomorphic have apparently been reached independently by one or two species in different lineages. Examples are the smooth and shining scapes of *G. rastrata* and of *G. mordax*, or the conspicuous metanotal groove of *G. bisulca* and *G. brunnea*. There are also some apparent reversals, as well as retention of plesiomorphies present in the outgroup. But these cases are few, isolated and do not represent the major trends of their respective species groups. Therefore, they were not taken into account for defining group character

states. Mandibular shape is an apparent useful indicator of phylogenetic trends, with the general direction being from plesiomorphic triangular mandibles to apomorphic forms as subtriangular or subfalcate. Subtriangular mandibles have been independently derived in the *haenschi*, *sulcata*, and *mordax* groups, as indicated by other mandibular traits such as the configuration of the chewing border, sculpture and cross section. In the last two groups (Figs. 6-8), the mandibular cross section reveals thick, robust mandibles as opposed to the slim cuneiform section of *G. haenschi*, which is the plesiomorphic state

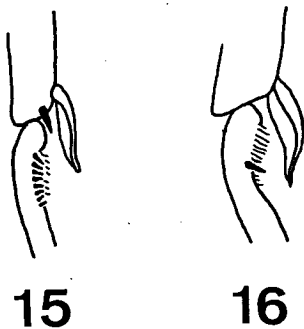


Figs. 9-14. Lateral view of propodeum of *Ectatomma* and *Gnamptogenys*. 9, *E. lugens*; 10, *E. quadridens*; 11, *E. tuberculatum*; 12, *G. bispinosa*; 13, *G. perspicax*; 14, *G. triangularis*.

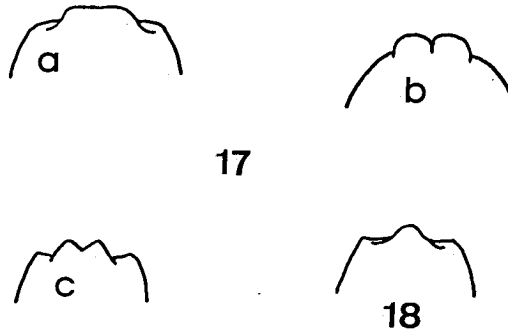
exhibited by the outgroup and the *striatula* and *rastrata* groups (Figs. 1-5). The subpetiolar process in its primitive state is triangular, lobe-like and anteriorly protruding. Modification has been towards a subquadrate shape, but some species, such as *G. striatula*, exhibit both conditions, and in the derived *mordax* subgroup the triangular subpetiolar process is probably a reversal.

Some characters are shared by the outgroup and certain groups or subgroups of *Gnamptogenys*. Two of these are particularly important: the propodeal denticles and the setae on the foretarsal base. The

propodeal denticles of *Ectatomma* may be absent in some species and when present, they are quite modest, usually lobe-like and directed dorsally. The declivitous propodeal face runs evenly and directly to the denticular apex (Figs. 9-11). The denticles in the *rastrata* group are stout and inclined posterad, and their base forms a more abrupt separation from the propodeal declivity (Figs. 12-14). With the exception of a few highly derived species, propodeal denticles are lacking in *Rhytidoponera* and the *striatula* group of *Gnamptogenys*. This suggests that the presence of propodeal denticles is probably independently derived in *Ectatomma* and *Gnamptogenys* and consequently was lacking in the ancestral stock of this group of genera. For this reason this state has been given value 0 in the character matrix for *Ectatomma*. The base of the foretarsus, in the concavity opposing the strigil, has an outer row of stout setae in *Ectatomma*, but only one prominent seta in most *Gnamptogenys* (Figs. 15-16). The exceptions are all the minuta-group species besides three other species, and each of these exceptions are unique within the genus as will be discussed later on. The brief anterior peduncle of the petiole, typical of *Ectatomma* is considered plesiomorphic for the *porcata* subgroup,



Figs. 15-16. Outer lateral view of apex of tibia and base of tarsus of foreleg. 15, typical configuration in *Ectatomma* with single calcaria on tarsal apex and row of setae in foretarsal concavity; 16, same in most *Gnamptogenys* with only one stout seta on foretarsal concavity.



Figs. 17–18. Ventral view of the anterior postpetiolar process. 17: a, *G. triangularis*; b, *G. haenschii*; c, *G. striatula*. 18, *G. sulcata*.

but autapomorphic for the *mordax* subgroup. The following characters were taken into account for all the species groups or individual species in the matrix, but have been restricted to the *minuta* subgroup of the *minuta* group (Lattke 1991). Characters 8, 17, 18 were considered non-additive.

The following character states were taken into account:

1. Head shape in frontal view: 0=wider posterad than anterad, 1=subquadrate/other.
2. Funiculus shape: 0=filiform to subfiliform, 1=incrassate.
3. Scape length: 0=surpassing vertexal border (Figs. 39, 41), 1=does not surpass, at most reaching the vertexal border (Fig. 43).
4. Scape sculpture: 0=scapes with appreciable sculpture, 1=smooth and shining. The aforementioned sculpture usually consists of punctulae, punctae or striae.
5. Development of the clypeal lamella: 0=poorly developed, very short, 1=well developed. This character refers to how far anterad the lamella extends. In poorly developed cases the longitudinal cephalic costulation is not clearly delimited from the lamella.
6. Shape of anterior clypeal margin: 0=convex clypeus (Figs. 33, 37, 39, 41), 1=straight/concave (Figs. 34–36, 62, 64).
7. Shape of lateral extremities of anterior clypeal lamella: 0=softly curves (Figs.

33, 37, 39, 41), 1=angular/pointed (Figs. 34–35).

8. Presence of median clypeal carinae: 0=present, 1=variable, 2=absent or indistinct.

9. Mandibular shape: 0=triangular (Figs. 39, 41), 1=subtriangular/subfalcate (Figs. 43, 54, 69, 62).

10. Shape of cross section at apical one third of mandible: 0=thin and cuneiform (Figs. 2–5), 1=wide and robust (Figs. 6, 7).

11. Sculpture of mandibular dorsum: 0=striae/rugulae (Fig. 54), 1=smooth and shining (Fig. 43).

12. Development of promesonotal suture: 0=deeply impressed, cleaving sculpture (Figs. 46, 49, 52), 1=weakly impressed, effaced (Fig. 55).

13. Development of metanotal groove: 0=deeply impressed (Fig. 55), 1=weak to effaced (Figs. 46, 49, 52).

14. Development of propodeal denticles: 0=absent (Figs. 46, 49, 52), 1=present (Figs. 12–14).

15. Position of spiracle on propodeal side, in lateral view: 0=anterad, well separated from declivitous propodeal face, 1=posterad, close to declivitous propodeal face.

16. Presence of setae on foretarsal base opposite the strigil: 0=row of stout setae (Fig. 15), 1=one prominent seta only (Fig. 16).

17. Development of dorsal metacoxal

process: 0=absent, 1=variable, 2=well developed (Figs. 46, 49).

18. Shape of the metasternal process: 0=stout denticles or tubercles, 1=acicular, straight denticles, 2=acicular, arched denticles.

19. Shape of petiolar node: 0=erect and high node (Figs. 46, 49, 52), 1=high and posterad, 2=subcylindrical/other (Figs. 61, 63, 65).

20. Petiolar spiracles: 0=directed obliquely; 1=directed ventrally.

21. Petiolar spiracles: 0=-at the same level as the surrounding integument; 1=in a distinct depression.

22. Shape of postpetiolar process in lateral view: 0=broad (Fig. 17), 1=bluntly pointed (Fig. 18).

23. A brief median carina on the dorsum of the postpetiolar process: 0=absent, 1=present. This is a low carinae that starts at the anterior margin of the process and briefly extends posterad.

24. Abdominal segment IV: 0=with a ventral stridulitrum, 1=without a ventral stridulitrum. Usually recognizable as a longitudinal band that refracts light into rainbow colors.

25. Shape of the fourth abdominal segment: 0=ventrally reflexed (Fig. 55), 1=straight (Fig. 44).

Species Groups.—Within the New World *Gnamptogenys* six species groups are defined here: *striatula*, *sulcata*, *concinna*, *minuta*, *mordax* and *rastrata*. The internal classification of the genus is depicted in Table 2. The characters used in defining the following informal groupings are diverse, thus they may or may not be synapomorphies. A question mark following the species name means that its position within the group is not clear.

I. *striatula* group: mandibles triangular with rugulae or striae on frontal surface; convex anterior clypeal margin; scapes usually surpassing vertexal margin, sculpturing punctate or vermiculate, never smooth and shining; eyes slightly behind cephalic midlength; head wider posterad

Table 2. Internal classification of *Gnamptogenys* (except *minuta* group)

	<i>striatula</i> group	
<i>porcata</i> subgroup:		<i>acuta</i> , <i>brunnea</i> , <i>ejuncida</i> , <i>extra</i> , <i>gentryi</i> , <i>gracilis</i> , <i>nigrivittrea</i> , <i>pilosa</i> , <i>pleurodon</i> , <i>porcata</i>
<i>striatula</i> subgroup:		<i>ammophila</i> , <i>moelleri</i> , <i>striatula</i>
<i>strigata</i> subgroup:		
<i>strigata</i> complex:		<i>andina</i> , <i>bisulca</i> , <i>ilimani</i> , <i>pitteri</i> , <i>strigata</i>
<i>haytiana</i> complex:		<i>haytiana</i> , <i>mina</i> , <i>reichenspergi</i> , <i>relicta</i>
	<i>rastrata</i> group	
<i>rastrata</i> subgroup:		
<i>bispinosa</i> complex:		<i>bispinosa</i> , <i>perspicax</i>
<i>rastrata</i> complex:		<i>cuneiforma</i> , <i>ingeborgae</i> , <i>laneci</i> , <i>lineolata</i> , <i>lucaris</i> , <i>mecotyle</i> , <i>menozzi</i> , <i>rastrata</i> , <i>triangularis</i>
<i>banksi</i> subgroup:		
<i>banksi</i> complex:		<i>laticephalae</i> , <i>mediatrix</i>
<i>semiferax</i> complex:		<i>semiferax</i>
	<i>sulcata</i> group	
<i>sulcata</i> subgroup:		
<i>fernandezi</i> complex:		<i>fernandezi</i>
<i>sulcata</i> complex:		<i>acuminata</i> , <i>curvoclypeata</i> , <i>tortuolosa</i>
<i>ericae</i> subgroup:		
<i>ericae</i> complex:		<i>ericae</i>
<i>lucaris</i> complex:		<i>lucaris siapensis</i>
<i>volcano</i> complex:		<i>volcano</i>
	<i>mordax</i> group	
<i>regularis</i> subgroup:		
<i>hartmani</i> complex:		<i>bruchi</i> , <i>hartmani</i> , <i>transversa</i>
<i>regularis</i> complex:		<i>horni</i> , <i>nana</i> , <i>pristina</i> , <i>regularis</i> , <i>rimulosa</i>
<i>annulata</i> complex:		<i>annulata</i> , <i>kempfi</i>
<i>mordax</i> subgroup:		<i>continua</i> , <i>boliviensis</i> , <i>interrupta</i> , <i>mordax</i> , <i>stellae</i>
<i>alfaroi</i> subgroup:		<i>alfaroi</i>
<i>levinates</i> subgroup:		<i>levinates</i>
	<i>concinna</i> group	
		<i>concinna</i> , <i>haenschi</i> , <i>schmitti</i>

than anterad; propodeal spiracle close to declivity; anterolateral propodeal declivity without spines or tubercles; anterior prosternal process broadly concave medianly; metacoxal dorsum always with denticle or lobe; high petiolar node; relatively wide anteroventral postpetiolar process; second

gastric segment ventrally arched. Most seem to be generalist predators, but nothing is yet known about the diet of the *strigata* subgroup species.

Three subgroups are recognizable: 1) *striatula* subgroup: petiolar node erect and sessile; subpetiolar process variably shaped, either subquadrate or triangular and projecting anterad in lateral view. 2) *porcata* subgroup: petiolar node posteriorly inclined, with short anterior peduncle; subpetiolar process lobe-like, projecting anterad in lateral view. 3) *strigata* subgroup: petiolar node variably shaped; subpetiolar process subquadrate with a cuneiform ventral edge (Fig. 30) as opposed to the uniformly parallel sides of the other *striatula* group species (Fig. 29). Many of the species have their propodeal spiracles elevated on small prominences. Most species are smaller in size than those of other subgroups and all are cryptobiotic leaf-litter inhabitants. Two species complexes can be pointed out in this subgroup: a) *strigata* complex: cephalic vertex sculptured; no distinct propodeal lobes; petiolar node not parallel-sided in lateral view, anterior margin usually convex (Figs. 40, 57). All species inhabit cloud forests, mostly of the Andes, with the exception of one found in the Cordillera de la Costa of Venezuela. b) *haytiana* complex: cephalic vertex mostly smooth and shining; small propodeal lobes present; petiolar node strongly compressed with subparallel anterior and posterior faces (Fig. 21); some species have modified sculpturing from the usual costulate patterns of the genus. Most species inhabit the Amazon-Orinoco river basin, except for one species found on Hispaniola Island. Kugler (1991) obtained similar results studying the sting apparatus of *brunnea*, nr. *strigata*, *porcata*, *moelleri* and *gracilis*. They were the only members of the *striatula* group included, as defined above, and were grouped together.

II. *rastrata* group: head subquadrate or wider anterad than posterad in frontal

view; anterior clypeal margin usually straight; mandibular front usually striate or rugulose, sometimes smooth; scapes usually surpassing vertex, sometimes with longitudinal rugulae, vermiculate or smooth and shining; promesonotal suture feebly impressed to absent, never totally dividing sculpture; metanotal suture well impressed; propodeum usually armed with denticles or spines; petiolar node low; subpetiolar process shape variable, usually projecting anterad but sometimes subquadrate; metacoxal teeth always present, usually acicular; second gastric segment ventrally arched. The ants of this group are specialized millipede predators and can be subdivided into two subgroups. 1) *rastrata* subgroup: mandibles triangular. Within the subgroup two complexes are defined: a) *bispinosa* complex: large species, anterior clypeal margin convex, propodeal teeth above level of spiracles; anterior lobe of subpetiolar process prominent. b) *rastrata* complex: smaller species; anterior clypeal margin straight; propodeal teeth at same level as spiracles; subpetiolar process subquadrate. 2) *banksi* subgroup: mandibles subfalcate to falcate. Two species complexes are defined. a) *banksi* complex: metacoxae and propodeum with denticles. b) *semiferrox* complex: metacoxae and propodeum lacking denticles. In a study of the sting apparatus of several species of *Gnamptogenys* Kugler (1991) grouped *triangularis* and *bispinosa*, the only members of the *rastrata* group as defined above, into one group.

III. *mordax* group: antennal scapes usually do not reach vertex and are compressed, smooth and shining; mandibles subtriangular to subfalcate with front smooth and shining; head subquadrate to elongate; mesosoma mostly parallel sided; small propodeal lobes frequently present, denticles absent (except one species); metacoxal denticles or lobes frequently lacking; second gastric segment straight, without ventral arching. Considerable inter-population variability in the average size

is observed in species of this group. The group can be divided into 4 subgroups: 1) *regularis* subgroup: mandibles subtriangular; anterior clypeal border straight and usually with laterally acutely pointed lamella; no transverse dorsal mesosomal sutures; petiolar node lacking anterior peduncle; subpetiolar process subquadrate. Within this subgroup three species complexes are recognizable. a) *hartmani* complex: mandibles triangular to subtriangular, frontal surface partially sculptured; vertical sculpturing on declivitous propodeal face; b) *regularis* complex: mandibles subtriangular, their frontal sides smooth and shining; vertical sculpturing on declivitous propodeal face; c) *annulata* complex: mandibles subtriangular, front smooth and shining; horizontal sculpturing on propodeal declivity. 2) *mordax* subgroup: mandibles subfalcate, frontal surface smooth and shining; anterior clypeal margin concave with rounded lamellar sides; well impressed metanotal groove; petiolar node slightly pedunculate; subpetiolar process projects anterad. 3) *alfaroi* subgroup: mandibles triangular, head prominently elongate; denticles on propodeum. The elongate head and armed propodeum makes this subgroup quite distinct from the others. 4) *levinates* subgroup: subtriangular mandibles, frontal surface sculptured; scapes surpassing vertex; subpetiolar process subquadrate. Its clypeus projects anterad more than in any extant species of the group.

IV. *sulcata* group: mandibles subtriangular, front smooth and shining; head subquadrate; anterior clypeal border usually straight; lamella usually laterally angular; scapes smooth and shining; metacoxal denticles wanting in some species; usually no transverse mesosomal sutures; petiolar node low, lacking peduncle; metasternal process acicular and arched; second gastric segment relatively straight; anteroventral postpetiolar process relatively narrow and bluntly pointed, in contrast with wider process of other species. Two sub-

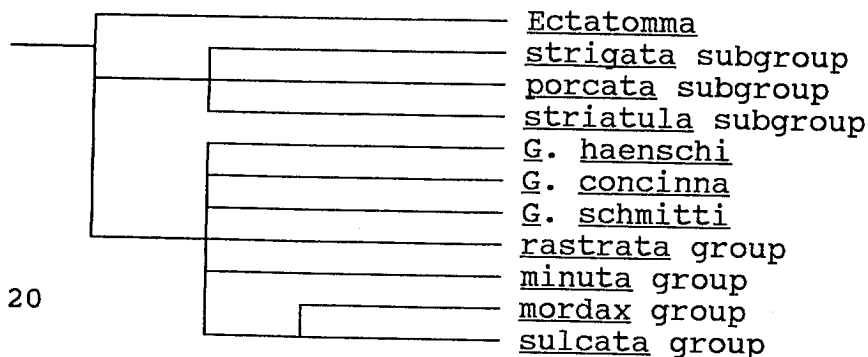
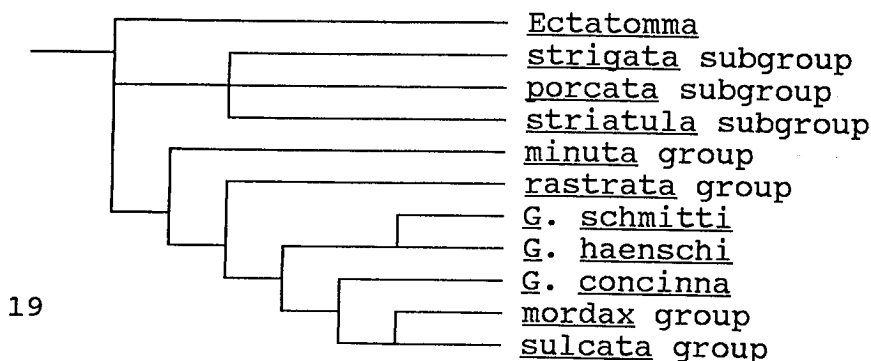
groups can be pointed out. 1) *sulcata* subgroup: posterior face of petiolar node with horizontal costulae. Two species complexes are recognizable: a) *fernandezii* complex: mandibles triangular; clypeal lamella convex. b) *tornata* complex: mandibles subtriangular; clypeal lamella straight. 2) *sulcata* subgroup: posterior node face with longitudinal costulae. This subgroup is made up of three complexes. a) *ericae* complex: clypeal lamella laterally acutely angulate; mandibles subtriangular. b) *lucaris* complex: clypeal lamella laterally rounded; mandibles subtriangular. c) *volcano* complex: clypeal lamella laterally obtusely angulate; mandibles triangular.

V. *concinna* group: head subquadrate; scapes surpassing vertex in frontal view; median clypeal carina frequently present; body sculpture densely striate; small pit frequently situated medianly on weakly impressed promesonotal suture; metasternal process slender to acicular; row of stout setae on base of foretarsus opposite strigil present; petiolar node with no anterior peduncle; metacoxae and propodeum unarmed. All three members of the group are large species. This group is nevertheless heterogeneous and its three members were considered individually in the matrix.

VI. *minuta* group: head subquadrate; frontal carinae broadly expanded laterad; row of stout setae on base of foretarsus opposite strigil present; petiolar spiracles facing directly ventrad and sunken within a pit.

Phylogenetics.—The possible evolutionary history of the six species groups is depicted in Fig. 19. Fig. 19 was computed by the "ie" option of Hennig '86. Figure 20 is a nelsen consensus tree calculated from 13 trees generated by the "ie" option of Hennig '86.

The *striatula* group subgroups are considered a sister group to the rest of the *Gnamptogenys* species considered. The *sulcata* and *mordax* groups are the most derived and are considered sister groups.



Figs. 19-20. Cladograms generated from the data in Table 1 by Hennig '86. 19, most parsimonious tree found by the "ie-" option, length 51, ci 58. 20, Nelsen consensus tree generated from the 13 most parsimonious trees found by the "ie" option, length 51, ci 58.

These results closely parallel Kugler's (1991) findings based upon the sting apparatus of several *Gnamptogenys* species. Within each of these groups we find species that apparently represent the transition from *striatula*-like ancestors and thus give additional support to the program results: the *hartmani* complexes of the *mordax* group, and the *volcano* and *fernandezi* complexes of the *sulcata* group. The *rastrata* group is probably closer to the *striatula* group than to the *mordax* or *sulcata* groups on account of characters such as triangular mandibles, long and usually sculptured scapes, the convex clypeal lamella of the *bispinosa* complex and the well developed

metacoxal tooth. The consensus tree recognizes two major groupings within the genus: *striatula*, and the rest. The "rest" make up a six-branched polytomy. Clearly further studies will be needed in the future in order to gain a better picture of the phylogenetic history of *Gnamptogenys*.

The *concinna* group is probably not monophyletic. It is diverse in mandibular shape, and in other details such as the development of the clypeal lamella or median clypeal carina. These traits as well as vestigial promesonotal suture are unusual remnants of plesiomorphies when compared with most other members of the genus. *G. haenschi* retains more plesiomor-

phies than the other two species and could be considered closer to the rootstock of the group. All are apparently specialized, either in feeding or nesting habits. This group opens a number of questions which can not be answered to satisfaction at present. Are the unarmed metacoxae plesiomorphic or apomorphic for this group? Could they represent relicts of an otherwise extinct lineage (or lineages) in *Gnamptogenys* history? Interesting parallels can be found in the shallow areolate ground sculpture and well-developed vertexal lobes of *minuta* subgroup members and those of several Old World species groups. A comparative study with Old World species could shed new light on the phylogeny of the genus. The striate sculpture of the *concinna* group can also be found, in a lesser degree, in the *simulans* complex.

The origins of Ectatommini can be traced to the late Cretaceous to early Tertiary, at least after the separation of Africa from Gondwana (80–90 Ma), but before the separation of South America from Palaeoantartica (36–41 Ma) (Lattke 1994). Given the presence of *Gnamptogenys* in the Indomalaysian Region and their absence in Africa, the origin of the genus also extends at least to this time period and geographically could be related to southern South America -Palaeoantartica. The spread of the ancestral fauna from South America to Central America probably took place during the mid Tertiary (30–38 Ma) as the Panama land bridge developed. Chances for an earlier exchange through possible connections between parts of the Greater Antilles and South America could have existed during the late Cretaceous (Donnelley 1988:26), but the geological history of the Caribbean region is still fraught with controversy (Rull 1989). The *mordax* group fossils from Dominican Amber show that by the late Oligocene to early Miocene (15–25 Ma), diversification of the American *Gnamptogenys* fauna was well underway. Potential ter-

restrial connections between Central America and the Greater Antilles could have existed during the Cenozoic via the presently submerged Nicaraguan rise which lays between Honduras and Jamaica (Donnelly 1988:28). It offered possibilities for dispersal until its subsidence during the middle Cenozoic. The presence of the Hispaniolan endemic species *G. haytiana*, *G. schmitti*, and *G. semiferox* lend support to such a connection and to the diversification of *Gnamptogenys* lineages some 26–34 Ma.

Ecology.—The ecology of *Gnamptogenys* found in Venezuela is treated in Lattke (1990) and should be consulted for more information. With the exception of a few additional tidbits of information little is added here. Generally most species are dwellers of mesic, forested habitats from Texas and Louisiana to northern Argentina. Nests are generally constructed in decomposing wood on the ground and tend to be small, rarely exceeding 500 adults. A few species exhibit polygyny.

The *striatula* group species are mostly generalist predators, but other species groups have developed varying degrees of specialization. This is taken to an extreme by the *rastrata* group species which prey only on certain diplopods. Beetles are the favorite of many members of other groups, and some species such as *G. hartmanni* and *G. horni* have also become fond of other ants as prey.

New World *Gnamptogenys*: A Synonymic List

When type material of a determined species was personally studied a "T" follows the distribution, plus the acronym of the collection where the specimen is deposited. Type material, in this case, includes specimens labelled either holotype, paratype, cotype, type series, or syntype.

acuminata Emery 1869. Tropical S. America.
acuta (Brown 1957a). Colombia-Bolivia. T:MCZC
alfaroi Emery 1894. Costa Rica-Ecuador
ammophila Lattke 1990. se Venezuela. T:MIZA

- andina* Lattke new sp. sw Colombia-Ecuador.
annulata Mayr 1887. Costa Rica-tropical S. America.
banksi (Wheeler 1930). Panama-Ecuador. T:MCZC
bispinosa (Emery 1890). Costa Rica-Colombia.
bisulca Kempf y Brown 1968. Costa Rica-Ecuador. T:MCZC
bufonis (Mann 1926). s Mexico-Nicaragua.
boliviensis Lattke, new species. n Bolivia.
bruchii (Santschi 1922). Argentina. T:MCZC
brunnea Lattke, new species. nw Colombia.
caelata Kempf 1967. Colombia-se Brazil.
= *soror* Kempf and Brown 1968
concinna (F. Smith 1858). Mexico-tropical S. America. T:BMNH
= *romani* Wheeler 1923.
= *semicircularis* Borgmeier 1929.
= *conica* Borgmeier 1929.
continua Mayr 1887 Mexico-tropical S. America.
= *panamensis* Santschi 1931
= *exarata* Emery, 1901. new synonymy.
cuneiforma Lattke, new species. Panama.
curvoclypeata Lattke 1990. Colombia-Venezuela. T:MCZC
ejuncida Lattke, new species. s Colombia.
ericae Forel 1912, revalidated. n S. America.
= *bufonum* Weber 1938, new synonymy.
extra Lattke, new species. Colombia-Ecuador.
falcifera Kempf 1967. n S. America.
fernandezi Lattke 1990. Colombia-Ecuador. T:MIZA
fieldi Lattke 1990. n central Venezuela. T:MIZA
gentryi Lattke, new species. sw Colombia.
gracilis (Santschi 1929). Guiana Shield. T:MCZC
laticephala Lattke, new species. Ecuador.
haenschii Emery 1902. Costa Rica-tropical S. America.
hartmanni (Wheeler 1915). s United States-n S. America. T:MCZC
= *nigrifrons* Borgmeier, 1949. new synonymy. T:MUSP
= *turmalis* Kempf y Brown, 1968. new synonymy. T:MCZC
haytiana (Wheeler and Mann 1914). Hispaniola. T:MCZC
horni Santschi 1929. Panama-Bolivia. T:MCZC
ilimani Lattke, new species. Bolivian Andes.
ingeborgae Brown 1992. e Colombia. T:MCZC
interrupta Mayr 1887. Mexico-tropical S. America, Jamaica.
kempfi Lenko 1964. Brazil-Peru.
lanei Kempf 1960. Brazilian Amazonas.
levinates Baroni Urbani 1980. Dominican Amber.
lineolata Brown 1992. Hispaniola. T:MCZC
lucaris Kempf 1968. s Brazil.
mecotyle Brown 1958. Panama-tropical S. America. T:MCZC
mediatrix Brown 1958. Amazon drainage. T:MCZC
menozzi Borgmeier 1948. s Brazil. T:MUSP
= *schubarti* (Borgmeier, 1948) new synonymy. T:MUSP
mina (Brown 1957). w S. America. T:MCZC
minuta (Emery 1896). Belize-Brazil.
= *bufonis* (Mann 1922)
= *emeryi* (Forel 1901)
= *scabrosus* (Mann 1922)
= *mus* (Santschi 1931)
= *panamensis* (Weber 1940)
= *carinata* (Weber 1940)
= *praedonax* Kempf 1968
moelleri (Forel 1912). Tropical S. America.
= *splendens* (Santschi 1929)
= *concinna* (Santschi 1929)
= *teffensis* (Santschi 1929) new synonymy. T:MCZC
mordax (F. Smith 1858). Mexico-tropical S. America. T:BMNH
= *nodosa* (Latreille 1802)
= *purensis* Forel 1912
= *sebastiani* Borgmeier 1937
nana Kempf 1960. Brazil.
nigrovitrea Lattke, new species. sw Colombia.
perspicax Kempf and Brown 1970. Colombia-Ecuador. T:MCZC
petiscapa Lattke 1990. ne Venezuela. T:MIZA
pilosa Lattke, new species. sw Colombia.
pittieri Lattke 1990. n Central Venezuela. T:MIZA
pleurodon (Emery 1896) Tropical S. America.
= *emeryi* (Santschi 1929).
= *vidua* (Santschi 1929).
porcata (Emery 1896). Honduras-Bolivia.
= *magnifica* (Santschi 1921). new synonymy.
pristina Baroni Urbani 1980. Dominican Amber.
rastrata (Mayr 1866). s Brazil.
= *trigona* Emery 1905. new synonymy.
regularis Mayr 1870. Mexico-Paraguay.
= *splendida* Pergande 1895. T:CASC
= *fiebrigi* Forel 1909.
= *arcuata* (Santschi 1929).
reichenspergi (Santschi 1929). Amazon-Orinoco drainage.
relicta (Mann 1916). Amazon-Orinoco drainage. T:USNM
rimulosa (Roger 1861). s Brazil.
schmitti (Forel 1901). Hispaniola.
= *minor* (Wheeler 1936). T:MCZC
semiferax Brown 1958. Hispaniola. T:MCZC
siapensis Lattke, new species. s. Venezuela.
simulans (Emery 1896). Costa Rica. T:USNM
stellae Lattke, new species. Costa Rica.
striatula Mayr 1883. Mexico-Argentina, Caribbean. T:BMNH
= *curtula* (Emery 1896) new synonymy.
= *stolli* (Forel 1899) new synonymy.
= *brasiliensis* (Emery, 1902).
= *angustiloba* (Forel 1908).
= *paulina* (Forel 1908).
= *simplicoides* (Forel 1908) new synonymy.
= *pernambucana* (Santschi 1929).
= *calcarata* (Santschi 1929).

- = *antillana* (Santschi 1929). T:MCZC
- = *hybrida* (Santschi 1929).
- = *mayri* (Santschi 1929).
- = *isthmica* (Santschi 1929).
- = *recta* (Santschi 1929). T:USNM
- = *rustica* (Santschi 1929) new synonymy.
- = *wheeleri* (Santschi 1929) new synonymy. T:MCZC
- = *arcuata* (Santschi 1929) new synonymy.
- = *wasmanni* (Santschi 1929) new synonymy.
- striolata* (Borgmeier 1957). se Brazil. T:MUSP
- strigata* (Norton 1871). Mexico–Colombia.
- = *simplex* (Emery 1896).
- sulcata* (F. Smith 1858). Mexico–tropical S. America. T: BMNH
- = *tornata* (Roger 1861). new synonymy.
- = *lineata* Mayr 1870.
- = *cearensis* Forel 1912.
- = *nitens* Mann 1916. T:USNM
- = *ypirangensis* Borgmeier 1928.
- tortuolosa* (F. Smith 1858). Amazon–Orinoco drainage. T:BMNH
- = *quitensis* Forel 1920.
- transversa* Lattke, new species. Panama.
- triangularis* Mayr 1887. Panama–Argentina; se United States.
- = *richteri* (Forel 1920)
- = *aculeaticoxae* (Santschi 1921) new synonymy.
- volcano* Lattke, new species. Costa Rica.
- vriesi* Brandao & Lattke, 1990. Ecuador.

KEY TO THE WORKERS OF THE NEW WORLD SPECIES OF GNAMPTOGENYS.

Note: In some species the difference between the promesonotal suture and the metanotal groove may be hard to establish when only one of the two is present, which is the usual case. In a dorsal view the lateral margins of the pronotum converge posterad and at the end of the convergence, when the margins more or less straighten out, the promesonotal suture is usually slightly arched anteriorly, while the metanotal groove is usually straight.

1. Petiolar spiracle directed ventrally and within a depression *minuta* group (see Lattke 1991)
 - Petiolar spiracle directed anteroventrally and not depressed; Pronotum separated from mesonotum by very distinct suture which completely cuts dorsal sculpture 2
 - Petiolar spiracle directed ventrolaterally and not depressed; Promesonotal suture absent to well impressed, but never completely cuts sculpture 23
2. Petiolar in lateral view with subparallel anterior and posterior margins sharply set off at right angles to relatively brief dorsal margin (Fig. 21); vertex usually smooth and shining, occasionally with weak transverse triae 3
 - Petiole not as above, in lateral view with anterior margin either broadly curving into dorsal margin or separated by broad angle (Figs. 22–4, 46, 49, 52); vertex strongly sculptured 6
3. Mesosomal dorsum with extensive smooth and shining areas 4
 - Mesosomal dorsum totally sculptured, usually rugulose or costulate 5
4. Metanotal groove well impressed, breaking sculpture; metacoxae armed; anterolateral lobes on declivitous propodeal face lacking (Amazon–Orinoco drainage) *relictata*
 - Metanotal groove absent; metacoxae unarmed; small lobes present on anterolateral declivitous propodeal face (Amazon–Orinoco drainage) *reichenspergi*
5. Postpetiolar dorsum transversely rugulose; body color yellowish (Hispaniola) *haytiana*
 - Postpetiolar dorsum longitudinally costulate; black to dark brown (w South America) *mina*
6. Mesosomal dorsum with well developed metanotal groove 7
 - Metanotal groove absent 9
7. Dorsum of gastric tergites I and II smooth and shining (sw Colombia) *gentryi* n. sp.
 - Dorsum of gaster with longitudinal costulae 8
8. Subpetiolar process subquadrate, with posterior angle (Fig. 21; Costa Rica to Ecuador, Andes) *bisulca*
 - Subpetiolar process shaped as an anteriorly projecting lobe with no posterior angle Fig. 42) (nw Colombia) *brunnea* n. sp.
9. Petiolar node in lateral view relatively erect, posterodorsal and anterodorsal angles not differing notably (Fig. 22) 10
 - Petiole in lateral view posteriorly inclined, anterior margin joins dorsal margin through broad convexity that contrasts with sharp angle between posterior and dorsal margins (Figs. 23, 24, 46, 49, 52) 12

10. SL < 1.08 mm 11
 - SL > 1.08 mm (tropical S. America) *moelleri*
11. Declivitous propodeal face with 5–11 longitudinal costulae between spiracles and 1–3 transverse costulae between each spiracle and longitudinal costulae (Fig. 26); decumbent pubescence on scapes sparse, < six decumbent and suberect hairs (Mexico to Argentina, Caribbean) *striatula*
 - Declivitous face with 13–16 longitudinal costulae between spiracles and no transverse costulae between each spiracle and longitudinal costulae (Fig. 25); scapes with dense and uniform decumbent pubescence, 1–3 subdecumbent hairs (se Venezuela) *ammophila*
12. Posterodorsal angle of petiolar node forms a sharp to bluntly pointed apex that overhangs posterior margin (Figs. 23, 24, 46, 49, 52); subpetiolar process in ventral view with uniformly narrow ventral edge, posteriorly widening only at junction with node (Fig. 29) 13
 - Petiolar node not, or slightly overhanging posterior margin (Figs. 40, 57); subpetiolar process in ventral view with cuneiform ventral edge: anteriorly thin, wider posterad with bifurcate apex that forms posterior angle of subquadrate process (Fig. 30) 20
13. Petiolar node with a blunt posterodorsal apex (Figs. 24, 46, 49, 52) 14
 - Petiolar node with acute posterodorsal point (Fig. 23; Colombia to Bolivia) *acuta*
14. Postpetiolar sternum totally costulate or striate; vertex usually with one (occasionally up to 3) transverse costulae next to vertexal carinae 15
 - Postpetiolar sternum with a basal median smooth and shining area; vertex with 4–5 transverse costulae next to vertexal carinae (Guiana Shield) *gracilis*
15. SSC < 10 (Fig. 27) 18
 - SSC > 10 (Fig. 28) 16
16. Body and legs brown, sculpture costulate to striate; body with abundant decumbent pubescence; subpetiolar process lobiform and without acute projection 17
 - Body piceous and legs ferruginous; body with abundant pubescence; subpetiolar process usually with an acute anteroventral projection, sometimes blunt, especially in specimens from Central America (Honduras to Bolivia) *porcata*
17. Femora with abundant erect to suberect hairs; ventral surfaces of meso- and metacoxae with erect hairs; gastric sculpture striate (sw Colombia) *pilosa*, n. sp.
 - Femora with decumbent to subdecumbent hairs and few or no erect to suberect hairs; ventral surfaces of meso- and metacoxae without erect hairs; gastric sculpture costulate (s Colombia) *ejuncida*, n. sp.
18. Five or more standing hairs on scapes and tibiae 19
 - One or no suberect and subdecumbent hairs on scapes and tibiae (Colombia–Ecuador) *extra*, n. sp.
19. Declivitous propodeal face with transverse costulae; petiolar node with anterior peduncle (Fig. 24; tropical S. America) *pleurodon*
 - Declivitous propodeal face with longitudinal costulae; node without peduncle (Fig. 59; sw Colombia) *nigrivitreata*, n. sp.
20. Postpetiolar sternum with well defined costulae or striae; dorsal propodeal face not notably depressed below mesonotum, dorsal and declivitous faces confluent 21
 - Postpetiolar sternum with weak irregular rugae; in lateral view dorsal propodeal face separated from mesonotum by notable depression, dorsal and declivitous faces sharply separated by a ridge (n Central Venezuela) *pittieri*
21. Scapes with moderate to weak pubescence, five or more standing hairs present 22
 - Scapes with dense, white subdecumbent pubescence, 0–2 standing hairs present (Bolivian Andes) *ilimani* n. sp.
22. HW > 0.84, WL > 0.35; OI < 0.16 (sw Colombia–Ecuador) *andina*, n. sp.
 - HW < 0.84, WL < 0.35, OI > 0.16 (Mexico–Colombia) *strigata*
23. With head in frontal view antennal scapes barely or do not reach the vertexal margin, never beyond, when laid back as straight as possible from insertions 24
 - Scapes clearly reach beyond vertexal margin 38

24. Mandibular dorsum with continuous striae or costulae over the basal one-fourth or more of length 25
 – Mandibular dorsum entirely smooth and shining, sometimes with scattered punctures 27
25. Distinct median carinae visible on clypeus; eyes small, $OI < 0.1$; mandibular dorsum entirely and densely striate (Costa Rica–tropical S. America) *haenschii*
 – No distinct median carinae on clypeus; eyes larger, $OI > 0.2$; mandibular dorsum without dense striae 26
26. Mandibular dorsum with costulae on basal one fourth or less, rest smooth and shining; propodeal declivity with longitudinal costulae (s United States–n South America)
 *hartmani* (in part)
 – Mandibular dorsum mostly rugulose; propodeal declivity with transverse costulae
 *transversa* n. sp.
27. Propodeal dorsum mostly transversely striate 28
 – Propodeal dorsum mostly longitudinally costulate or striate, continuous with rest of notal sculpturing 30
28. Head subquadrate, $CI > 0.78$; body brown to dark brown 29
 – Head notably rectangular and elongate, $CI < 0.78$; body black (Costa Rica–Ecuador) *alfaroi*
29. Costulae on mesosomal and petiolar dorsum subopaque; propodeum with small teeth; metacoxal teeth (Brazil and Peru) *kempfi*
 – Very fine striae on mesosoma and node; no teeth on propodeum nor on metacoxae (Costa Rica to tropical S. America) *annulata*
30. Clypeal lamella medianly straight and laterally acutely angulose; subpetiolar process subquadrate, usually with acute posteroventral tooth 36
 – Clypeal lamella usually concave and laterally rounded, never acutely angular (rarely with slight median projection and laterally bluntly angular); subpetiolar process usually projecting anteriorly as subtriangular lobe, sometimes subquadrate, but never with acute posteroventral tooth 31
32. Mandibles subtriangular to subfalcate; metanotal groove well-impressed 32
 – Mandibles triangular; metanotal groove absent (Brazil) *nana*
32. Metacoxa with dorsobasal lobe or tooth 34
 – Metacoxa lacking tooth or lobe, at most small swelling or low tubercle present 33
33. Body sculpture striate; gastric tergum 2 smooth and shining; clypeal lamella laterally bluntly angulose, slightly projecting anterad medianly and with small concavity in middle of projection (Fig. 60; Costa Rica) *stellae* n. sp.
 – Body sculpture costulate; gastric tergum 2 longitudinally costulate; clypeal lamella laterally rounded and medianly concave (Fig. 43; Mexico to tropical S. America, Jamaica) *interrupta*
34. Metacoxal dorsum with low triangular lobe; $HW < 1.12$, $WL < 1.81$ mm 35
 – Metacoxal dorsum with high, approximately parallel-sided lobe or tooth; HW usually > 1.12 , $WL > 1.81$ mm (Mexico to tropical S. America) *mordax*
35. Cephalic dorsum striate; anterolateral lobes of declivitous propodeal face weakly developed (n Bolivia) *boliviensis*, n. sp.
 – Cephalic dorsum costulate; anterolateral propodeal lobes well developed (Mexico to tropical S. America) *continua*
36. Metanotal groove weakly impressed, visible only with limited angles of view; subpetiolar process with acute posteroventral tooth; anterolateral angles of declivitous propodeal face bordered by raised carinae that cross over costulate sculpture 37
 – Metanotal groove well-impressed, visible with any angle of view; subpetiolar process without acute posterior tooth; declivitous propodeal face lacking carinae different from costulate sculpture (s. Brazil) *rimulosa*
37. Declivitous propodeal face with longitudinal costulae that converge posterad; anterior nodal face with transverse costulae; meso-metapleural suture absent or very weakly impressed (Panama to Bolivia) *horni*

- Declivitous propodeal face with longitudinal parallel costulae; anterior nodal face mostly longitudinally costulate, basal transverse costulae frequently present and rarely occupy all; meso-metapleural suture distinctly impressed (Mexico to Paraguay) *regularis*
- 38. Mandibles very elongate: falcate or subfalcate, only their apices touching or crossing when closed (Figs. 35, 54) 39
 - Mandibles triangular or subtriangular, apical and basal margins separated by rounded or angular basal angle (Figs. 33-34, 36-37) 43
- 39. Declivitous propodeal face with spines or denticles; metacoxal tooth present 40
 - Declivitous propodeal face rounded, no trace of spines or denticles; coxal tooth absent 42
- 40. Inner basal mandibular border with short triangular tooth that represents basal angle (Fig. 54) 41
 - Inner basal mandibular border with broadly convex lobe or flange (Amazon drainage) *mediatrix*
- 41. Clypeus with two lobes between antennal fossae and anterior lamella, lobe protrude over lamella in front view; mesothoracic spiracles not set in deep depressions (Ecuador) *laticephala*, n. sp.
 - Clypeus without lobes between antennal fossae and anterior lamella; spiracles of mesothorax set in deep depressions (Panama to Ecuador) *banksi*
- 42. Mandibles long and slender (Fig. 36); dorsal propodeal face evenly and transversely costulate (Hispaniola) *schmitti*
 - Mandibles shorter and wider; dorsal propodeal face subvermiculately and longitudinally costulate (Hispaniola) *semiferrox*
- 43. Mandibles mostly smooth and shining, with scattered punctures, subtriangular to triangular, sometimes striae or costulae present on basal one-third or less; usually without transverse sutures on mesosomal dorsum (except *concinna*) 44
 - Mandibles with longitudinal rugulae or striae (sometimes weakly impressed), always triangular, never subtriangular; metanotal suture distinctly impressed 55
- 44. HW > 1.43; WL > 2.27 mm 45
 - HW < 1.43; WL < 2.27 mm 46
- 45. Sculpture costulate; metacoxae with dorsal tooth; petiolar node ends in blunt angle; black (Amazon-Orinoco drainage) *tortuolosa*
 - Sculpture striate; metacoxae without dorsal tooth, with low tubercle at most; petiole ends in acute point or beak; ferruginous (Mexico to tropical S. America) *concinna*
- 46. Sculpture striate; anterolateral corners of declivitous propodeal face bordered by carinae that cross costulae; antennal scape when laid back does not surpass vertexal margin by more than one apical width 47
 - Sculpture costate; declivitous propodeal face without carinae distinct from costae; scapes surpass vertexal margin by more than an apical width 48
- 47. Posterior face of petiolar node longitudinally costulate (s United States to n S. America) *hartmani* (in part)
 - Posterior nodal face transversely costulate (Argentina) *bruchii*
- 48. Posterior face of petiolar node transversely costulate 49
 - Posterior face of node longitudinally costulate 51
- 49. Anterior clypeal lamella laterally acutely angular; mandibles subtriangular, basal and apical margins joined by very broad continuous convexity (Fig. 34) 50
 - Clypeal lamella very evenly convex laterad; mandibles triangular, basal and apical margins separated by angle (Fig. 33; Venezuela to Ecuador) *fernandezi*
- 50. Petiolar node with posterior pointed projection; declivitous propodeal face with longitudinal costulae; body color uniformly brown (tropical S. America) *acuminata*
 - Node sometimes with slight posterior projection, but never pointed; declivitous propodeal face with transverse costulae, rarely longitudinal; color variable, usually with brown and ferruginous areas, rarely totally brown (Mexico to tropical S. America) *sulcata*
- 51. Anterior clypeal lamella laterally acutely angulate 52

- Clypeal lamella laterally rounded or obtusely angulate 53
- 52. HW < 1.11, WL < 1.72 mm; anterior clypeal lamella straight (Fig. 31; n S. America) ...
..... *ericae* reval. sp.
- HW > 1.11, WL > 1.72 mm; anterior clypeal lamella medially convex and laterally concave (Fig. 32; Venezuela and Colombia) *curvoclypeata*
- 53. Declivitous propodeal face with longitudinal costae; clypeal lamella straight anterad and laterally rounded; mandibles subtriangular, basal and apical margins meeting through broad convexity (Fig. 62) 54
- Declivitous propodeal face with transverse costae; clypeal lamella excised mesad and with two lateral convexities; mandibles roughly triangular, apical and basal margins separated by notch (Fig. 64; Costa Rica) *volcano*, n. sp.
- 54. Petiolar node with dorsal margin more or less evenly convex in lateral view; metacoxal tooth denticle-like; subpetiolar process with acutely pointed angles (s Brazil) *lucaris*
- Petiolar node with dorsal surface flat; metacoxal tooth broadly triangular; subpetiolar process bluntly angulate (s Venezuela) *siapensis*, n. sp.
- 55. Antennal scapes usually smooth and shining 56
- Scapes with longitudinal striae or rugulae (sometimes partially effaced) 60
- 56. Scapes surpass vertexal margin by two or more apical widths; HW > 1.07, WL > 1.64 mm 59
- Scapes when laid back do not surpass vertexal margin by more than one apical width; HW < 1.07, WL < 1.64 mm 57
- 57. Body sculpture striate; no propodeal denticles; ventral petiolar process in lateral view projecting anterad as a lobe, lacking a posterior angle; Hispaniola Island *lineolata*
- Sculpturing costulate; propodeal denticles present; petiolar ventral process with a pointed posterior corner; South America 58
- 58. Costulae on dorsum of metanotum and propodeum well defined; petiole in dorsal view with concentric costulae (s Brazil) *rastrata*
- Costulae on dorsum of metanotum and propodeum mostly effaced; petiole in dorsal view transversely costulate (e Colombia) *ingeborgae*
- 59. Propodeal teeth longer than diameter of propodeal spiracles; petiolar node longer than wide and subpetiolar process projects anterad as triangular lobe (Brazilian Amazon drainage) *lancai*
- Propodeal teeth shorter than diameter of propodeal spiracles; petiolar node wider than long; subpetiolar process subquadrate (s Brazil) *menozzi*
- 60. Anterior pronotal margins with at least five transverse costulae or rugulae; eyes prominent and bulging (Fig. 37) 61
- Anterior pronotal margin with longitudinal costulae that extend caudad across rest of mesosomal dorsum; eyes not bulging and prominent, relatively flat (Fig. 38; Florida, Panama to Argentina) *triangularis*
- 61. Vertex with 4-5 transverse costulae; anterior one-half of postpetiolar tergum rugose ... 62
- Vertex with longitudinal costulae; anterior one-half of postpetiolar tergum longitudinally costulate 63
- 62. Dorsum of metanotum and all of propodeum with transverse costulae (Panama)
..... *cuneiforma* n. sp.
- Dorsum of metanotum and propodeum longitudinally costulate; declivitous propodeal face with weak longitudinal costulae, smooth and shining mesad (Panama to tropical S. America) *mecotyle*
- 63. Propodeal spines at least as long as distance between inner sides of their base (Fig. 12); ferruginous species (Costa Rica to Colombia) *bispinosa*
- Propodeal spines shorter (Fig. 13); black species (Colombia to Ecuador) *perspicax*

New World species of *Gnamptogenys*

In this section the species are arranged in alphabetical order. In the synonymy listings, when more than one citation follows a junior synonym, the first author, after the author of the species, is responsible for that synonymy. The diagnosis is meant to complement the results obtained in the key. In order to avoid repeating information already published the reader should consult Lattke (1990) for additional data concerning ecology and localities of species previously known from Venezuela. For the sake of brevity the dates and collector's names have been omitted.

Gnamptogenys acuminata Emery

Gnamptogenys acuminata Emery 1896:50; Brown 1958:228, 236, 299; Kempf 1961:491; Kempf 1972:111; Kempf 1976:51; Lattke 1990:9.

Diagnosis.—Mandibles subtriangular; longitudinal costulae on mesosoma and declivitous propodeal face; transverse sutures weak, visible only with certain angles of light; body dark brown to black; coxae and basal two-thirds of femora testaceous to brown-testaceous; tibiae, apex of femora, antenna and mandibles brown.

Ecology.—Found in humid forests, nesting in rotting wood.

Comments.—The acute posterior tooth

on the petiolar node, combined with longitudinal costulae on the declivitous propodeal face, seem to provide the most reliable distinction from *tornata*. Color in *acuminata* is not so variable but light-pigmented forms can occasionally be found. The mesometepisternal suture is usually absent.

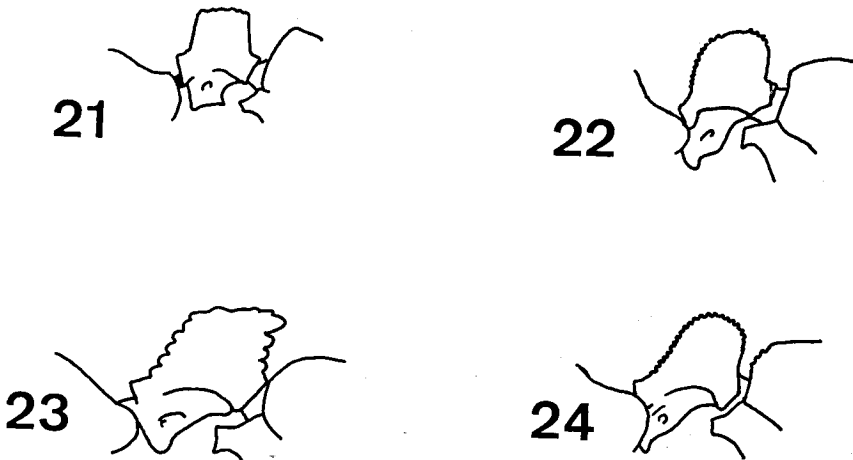
Specimens Examined.—BRAZIL, Amazonas: Ig. Marianil, Rio Branco Rd, 24 km NE Manuas. COLOMBIA, Meta: Caño EL Buque, S Villavicencio, 480 m. PERU, Loreto: 15 km WSW Yurimagua, 5°59'S 76°13'W, 220 m; Panguana: 9°37'N 74°56'W, 220 m. VENEZUELA, Bolívar: Rio Cuyuní, 66 km SSE El Dorado, 6° 09' N 61° 30'W, 250 m; 10 km E Icabarú, 700 m. Amazonas: Río Baria, 0°50'N 66°10'W, 140 m.

Gnamptogenys acuta Brown

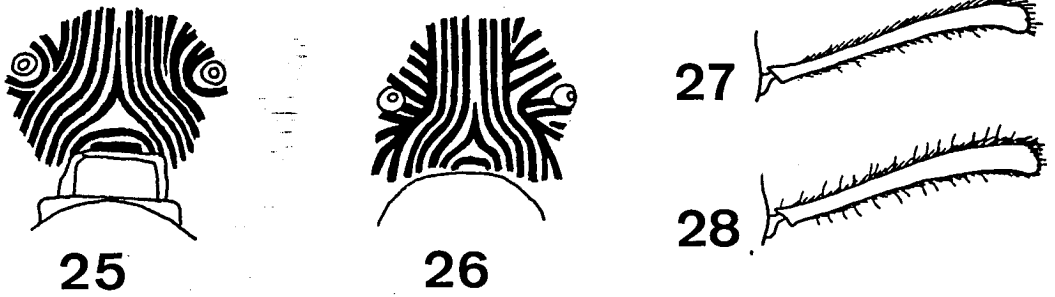
Holcoponera acuta Brown 1957:491.

Gnamptogenys acuta (Brown); Brown 1958:300; Kempf 1972:111.

Diagnosis.—Similar to *striatula*; four to six transverse costulae on anterior pronotal face, rest of mesosoma with longitudinal costulae; longitudinal costulae on anterior face of postpetiole; body dark brown to black, legs brown.



Figs. 21-24. Lateral view of petiole. 21, *G. relictata*; 22, *G. moelleri*; 23, *G. acuta*; 24, *G. pleurodon*.



Figs. 25–26. View of declivitous propodeal face. 25, *G. ammophila*; 26, *G. striatula*.

Figs. 27–28. Frontal-view of scapes, showing hairs and pilosity. 27, *G. pleurodon*; 28, *G. porcata*.

Ecology.—Found in low to premontane jungles.

Comments.—Not frequently collected, knowledge of its range has expanded slowly.

Specimens Examined.—ECUADOR, Napo: 2–8 miles N Puyo, Pastaza, 935 m; original locality unknown: Quarantine Station, San Pedro, California. PERU, Junín: Colonia Perene, Río Perene, 18 km NE La Merced; Loreto: Boquerón, 500 m; COLOMBIA, Meta, Mesetas, 780 m.

Gnamptogenys alfaroi Emery

Gnamptogenys alfaroi Emery 1894:145; Brown 1958:301; Kempf 1972:111.

Diagnosis.—Mandibular dorsum smooth and shining with some punctulae; metacoxal spine present; subpetiolar process anteriorly projected; gastric tergum 2 with basal one-half longitudinally costulate, the rest smooth and shining; disk of postpetiolar sternum smooth and shining; body black; legs and antennae brown.

Ecology.—Known from montane rain forest.

Comments.—The Ecuador record extends its distribution from the only previously known localities in Costa Rica. This species is a striking member of the *mordax* group due to its elongated, almost cylindrical body. Its relationship with other members of the *mordax* group is not clear. It is rarely collected.

Specimens Examined.—COSTA RICA,

Turrialba. ECUADOR, Guayas: 3 km SW Bucay (MCZC).

Gnamptogenys ammophila Lattke

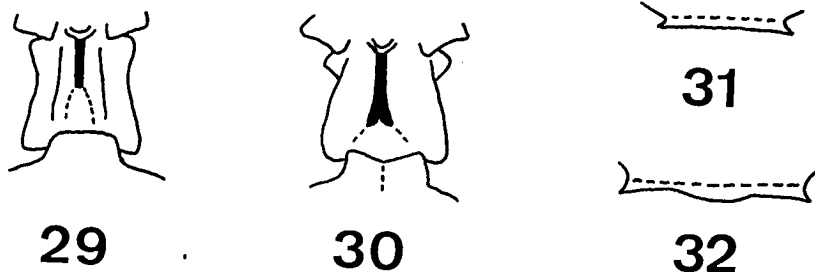
Gnamptogenys ammophila Lattke 1990:9.

Diagnosis.—Black, finely costulate with brown scapes and mandibles, light brown legs. Subpetiolar process subquadrate, not as projecting anterad as in *striatula*. Mesosomal dorsum with longitudinal costulae and erect hairs up to 0.30 mm in length.

Ecology.—This species is unique within the genus due to its savanna nest sites as opposed to the forest preferences of most species. Its range is apparently restricted to high (>1200m), cool savannas of the Upper Río Caroní watershed (La Gran Sabana). It has not been found in lower savannas, despite the fact that another ant, *Pogonomyrmex naegeli*, is widespread in savannas isolated in the midst of great expanses of forest. The extent of savannas in the Guiana Shield was much broader during the last glaciation (75,000–11,000 B.P.), as were generally cooler temperatures and a drier climate (Schubert 1988; Clapperton 1993). Such conditions could conceivably have favored the origin of this species from its apparent sister species *G. striatula* during the course of the last glaciation.

Comments.—See Lattke 1990.

Specimens Examined.—VENEZUELA, Bolívar: vía El Dorado–Santa Elena, km 141, Río Apanwao, 5°52'N 61°26'W, 1500 m.



Figs. 29–30. Ventral view of petiole showing shape of subpetiolar process (outlined in black). 29, *G. gracilis*; 30, *G. andina*.

Figs. 31–32. Frontal view of clypeal lamella. 31, *G. sulcata*; 32, *G. curvoclypeata*.

***Gnamptogenys andina* Lattke,**
new species
(Figs. 39–40)

Type Specimens Examined.—Holotype worker. COLOMBIA, Valle: Parque Farallones de Cali, El Topacio, 20 km NW Cali, 76 37'N 2 30'W, 1550 m, 31-XII-1981, J. Lattke No. 220. Deposited in MIZA. Paratypes (all from Colombia, Valle): (1). 22 workers from the same nest series as the holotype. (2) 21 workers, same data as holotype except collection numbers 220, 214, 218. (3). 18 workers, Cali-Buenaventura road, km 21, 15 km NE Cali, 1300–200 m, 1-X-1975, J. Lattke, leg. (4). 6 workers, CVC station near Pance, 15 km W Cali, 1700 m, 12-XII-1975, J. Lattke, leg.

Additional Specimens (not paratypes).—ECUADOR, Bolívar, 20 km de Palzabamba, 1500–1800 m, 18-XI-87, N. Zavala, leg. Six paratypes deposited in MCZC and three in each of the following: LACM, BMNH, CASC, MUSP. The remainder of paratypes and other specimens deposited in MIZA.

Worker.—Holotype (Paratypes) measurements: HL 1.04 (1.02–1.08); ML 0.40 (0.26–0.36); HW 0.88 (0.82–0.94); SL 0.86 (0.86–0.92); ED 0.12 (0.10–0.14); WL 1.36 (1.36–1.60) mm; CI 0.85 (0.83–0.90); SI 0.98 (0.93–1.10); OI 0.14 (0.11–0.17) $n=7$.

Typical *striatula* group member: Roughly costulate sculpture. Vertexal margin concave in frontal view; clypeal costulae extend slightly onto anterior lamella; man-

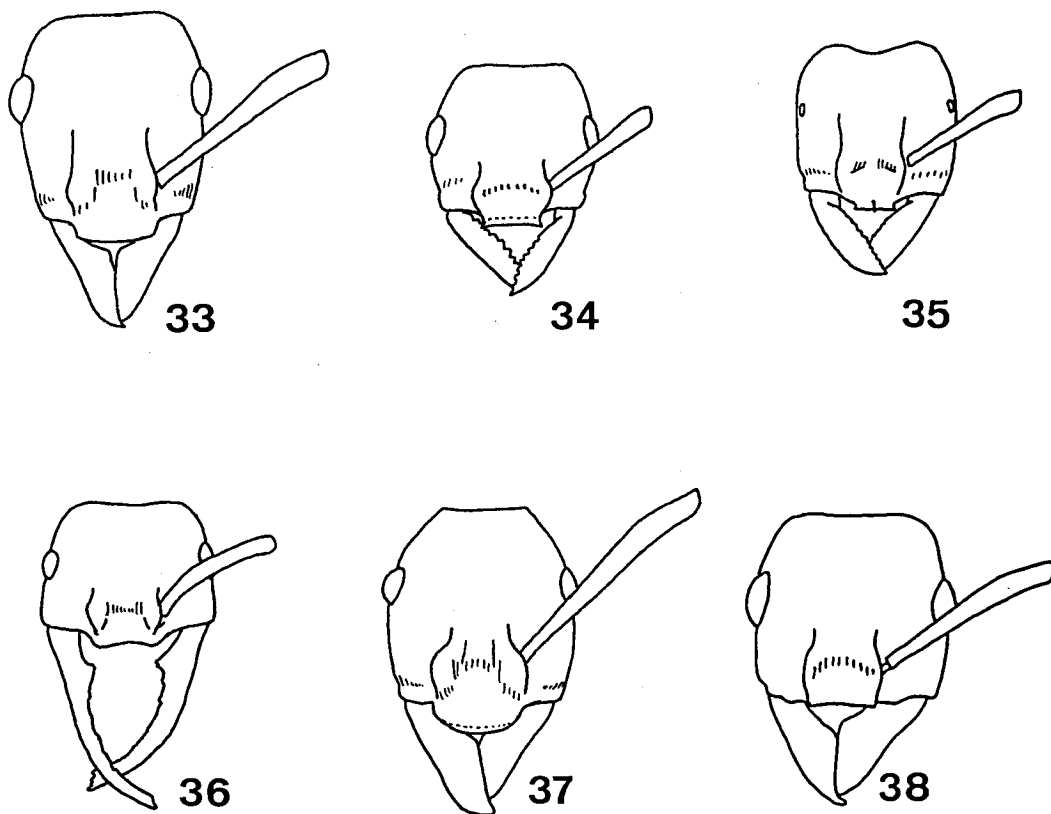
dibles triangular and mostly striate except for smooth and shining lamellate basal corner and margin of chewing border; compound eyes relatively small; in lateral view dorsal propodeal margin not notably depressed below rest of mesosomal dorsum; propodeal spiracle slightly elevated above rest of sculpture and at edge of declivitous surface; petiolar node posteriorly inclined; subpetiolar process subquadrate, typical of *strigata* subgroup. Longitudinal costulae present on declivitous postpetiolar face. Weak transverse costulae on postpetiolar ventrum.

Fairly abundant standing hairs on body, but very sparse appressed pubescence. Legs smooth and shining, except for numerous piligerous punctures. Metacoxal dorsum with a well-developed denticle. Body dark brown to black with yellowish legs.

Male.—Longitudinal costulae on cephalic dorsum; mandibles triangular and costulate; pronotum smooth and shining with piligerous punctures; pronotum with piligerous punctures; mesonotum mostly smooth and shining except for narrow anterior band of transverse striae; declivitous propodeal face with longitudinal rugulae that do not reach anterior dorsal face; gaster smooth and shining.

Queen.—Unknown.

Discussion.—This species is near *strigata* and though the differences are not striking, they seem consistent enough to define a



Figs. 33–38. Frontal view of head. 33, *G. fernandezii*; 34, *G. sulcata*; 35, *G. haenschii*; 36, *G. schmitti*; 37, *G. bispinosa*; 38, *G. triangularis*.

species. *G. strigata* is smaller (HW 0.74–0.80); WL 1.20–1.34 mm), with relatively larger eyes (OI 0.17–0.20) and shorter scapes (0.70–0.78 mm) and dorsal propodeal face in lateral view is usually depressed below the rest of the mesosomal dorsum. It is probably sympatric with *andina* in part of its range, having been found only 51 km away from the *andina* type locality. The male of *strigata* has a median area of rugosity on the mesonotum and totally rugulose propodeum. Individuals of the Ecuadorean sample are slightly larger than the Colombian specimens.

Etymology.—The name alludes to the Andes, a portion of which is inhabited by this species.

Gnamptogenys annulata Mayr

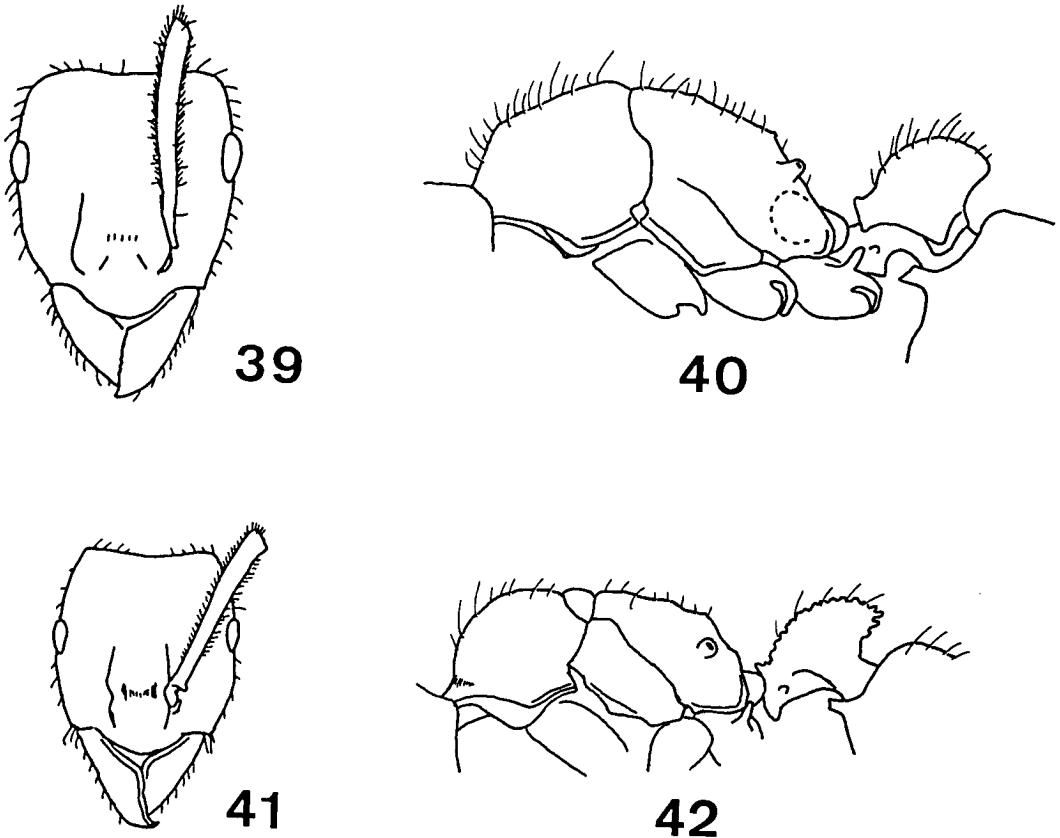
Ectatomma (Gnamptogenys) rimulosa var. *annulata* May 1887:543.

Ectatomma (Gnamptogenys) annulatum Mayr; Mann 1916:408; Luederwalt 1926:23.

Gnamptogenys annulatum Mayr; Mann 1922:3; Brown 1958:300; Kempf 1960:390; Kempf 1961:491; Kempf 1969:275; Kempf 1972:112; Kempf 1976:51; Lattke 1990:11.

Diagnosis.—Finely striate species; longitudinal striae on head, promesonotum and gastric segments 2 and 3; petiolar dorsum with transversely arched striae; mandibles subtriangular; metacoxal spine absent; body reddish brown; coxae ferruginous yellow; tibiae and femora yellow to testaceous but apically ferruginous yellow to ferruginous.

Ecology.—J. Longino (pers. comm.) reports from a nest midden chitinous fragments of Coleoptera, aradid bug nymphs, an unidentified male ant, and a *Camponotus* worker. An apparently recently killed



Figs. 39–42. Frontal view of head, and lateral view of mesosoma and petiole. 39–40, *G. andina*; 41–42, *G. brunnea*.

Pheidole (cephalica?) queen was also found in a nest chamber.

Comments.—The gauge of costulation can vary from striate to finely costulate, but coloration is fairly stable.

SPECIMENS EXAMINED: BOLIVIA, Caranaví: vic. Radio, 800 m. BRAZIL, Amazonas: 80 km NNE Manaus, 2°25'S 59°46'W, 80 m. COLOMBIA, Valle: Bajo Calima; Cauca: Isla La Gorgona. COSTA RICA, vic. Guapiles, Río Toro Amarillo; Prto. Limón; Limón: Tortuguero, < 100m, 10°35'N 83°31'W; Heredia: 10°20'N 84°84'W, 500 m; 3 km S Puerto Viejo, 10°26'N 84°00'N, 50 m; Pq. Nac. Braulio Carrillo, Carrillo, 500 m; Península de Osa, Sirena, 8°28'N 83°35'W; Alajeula: Rio Peñas Blancas, 10°19'N 84°43'W, 800 m. EC-UADOR, Pichincha: 6 km W Sto. Domingo

de los Colorados, 953 m; Maquipucuna, 5 km ESE Nanegal, 0°70'N 78°38'W, 1250m; Sucua. GUIANA, Kartabo. PERU, Panguana: 9°37'S 74°56'W, 220 m; Tingo María: Valle de Monsón; Madre de Dios: Res. Río Tambopata, 30 km SW Prto. Maldonado, 290 m; Loreto: Boquerón, 500m; San Martín: Davidcillo, 30 km NNE Tarapoto, 6°15'S 76°15'W. VENEZUELA, Táchira: Uribante-Caparo, Las Cuevas, 7°47'N 71°46'W, 500 m; Barinas: Ticoporo, 8°04'N 70°48'W, 250 m; Amazonas: Alto Mavaca, 2°01'N 65°07'W, 200 m; Alto Siapa, 1°42'N 64°38'W, 500 m.

***Gnamptogenys banksi* (Wheeler)**

Emeryella banksi Wheeler 1930:10.

Gnamptogenys banksi (Wheeler); Brown 1958: 227,233; Kempf 1972:112.

Diagnosis.—Finely costulate; head broad with longitudinally striated scapes; meso-metanotal suture not deeply impressed, but distinct. It lacks the long, fine mandibular sulcus present in *laticephala*.

Ecology.—Found in rotten logs in lowland rain forest, this species is a specialist millipede predator.

Comments.—It is rarely collected. A specimen from Barro Colorado has two deep fossae on the posterolateral margin of the mesonotum. The type was examined.

Specimens Examined.—ECUADOR, Guayas: 3 km S Bucay. PANAMA, Isla Barro Colorado (MCZC).

Gnamptogenys bispinosa (Emery)

Ectatomma (Poneracantha) bispinosum Emery 1897:547.

Ectatomma (Holcoponera) bispinosum Emery; Emery 1890:40.

Holcoponera bispinosa (Emery); Wheeler 1952: 132–133.

Gnamptogenys bispinosa (Emery); Brown 1958: 301; Kempf and Brown 1970:319; Kempf 1972:112.

Diagnosis.—Eyes subglobulose, scapes long and surpassing vertexal margin; mandibles edentate. Promesonotal suture breaks sculpture dorsally but not laterally; mesometanotal suture deep and broad. Head, mesosoma and postpetiole rugose; ferruginous.

Ecology.—This wet forest species is a millipede specialist. J. Longino (pers. comm.) observed the following two raids from the same colony, both at 11:00 AM: "A column of 20 workers was moving along a liana on the forest floor. They left the liana and moved very slowly across the leaf litter, frequently bunching up. They all went under a leaf and then agitated ants could be seen coming out from under the leaf, 2 or 3 ants at a time, cleaning their antennae and mandibles. I removed the leaf to find the ants attacking a millipede. Some were stinging and some were pulling on the legs. The distance

from the first sighting to the prey was 6 m. I followed a returning worker as far as I could into a tree fall tangle, 10 m from prey." The second attack involved 46 workers tackling a 6 cm long millipede within a rotten log. Once the millipede was subdued they carried it back to the nest.

Two millipedes taken from the nest by Longino were determined by R.L. Hoffman as *Trichomorpha* sp. (Polydesmida: Chelodesmidae), and *Epinannolene* sp. (Spirostreptida: Epinannolidae).

Comments.—This unique ant was previously only known from a restricted area in Central America. Along with *perspicax*, it represents a highly specialized form in one lineage of millipede hunters. The anterior clypeal setae are more developed than in any other of the *rastrata* group species and an interesting autapomorphy is a brief anteromedian longitudinal sulcus on the clypeus.

Specimens Examined.—COLOMBIA, Valle; COSTA RICA: Heredia: 10°20'N 84°04'W, 500m; Península de Osa, Pq. Nac. Corcovado, Sirena, < 100m, 8°28'N 83°35'W; Puntarenas: 2 km S San Vito, Finca Las Cruces, 1219 m; Río Reventazón, 4 km E Turrialba (MCZC).

Gnamptogenys bisulca Kempf and Brown

Gnamptogenys bisulca Kempf and Brown 1968: 92–3; Wheeler and Wheeler 1971:1202; Kempf 1972:112.

Diagnosis.—Longitudinal costulae on propodeal declivity, metacoxal spines hooked and triangular, not acicular; well defined transverse costulae on postpetiole sternum; propodeal spiracle as low as surrounding sculpture, not raised.

Ecology.—Occurs in mesic forested habitats. The localities suggest preference for relatively cool sites as the lowest altitudes are found at higher latitudes (10°N) and as latitude approaches the equator the localities ascend in altitude.

Comments.—Within the *strigata* complex this species is unique due to the development of its metanotal groove, and within the *striatula* group two other species also show this character state. Recent collections show a wider range than previously known.

Specimens Examined.—COLOMBIA, Chocó: 10 km SW San José del Palmar, Rio Torito, Finca Los Guadales, 800 m, 1/4-VI-78; Valle: vic. Lago Calima, 1600 m; vic. Saladito, 1900–2100 m. COSTA RICA, Heredia: 17 km S. Puerto Viejo, 10°18'N 84°02'W, 550 m; 17 km N Volcán Barba, 10°17'N 84°05'W, 880–1020 m. ECUADOR, Pichincha: 25 km ENE Alluriquin, vía Chiribaga, 1400–1800 m; Tinalandia, 16 km SE Sto. Domingo de los Colorados, 9-VI-76; 3 km E Tandapi, 1300 m.

Gnamptogenys boliviensis Lattke,
new species
(Figs. 43, 44)

Type Material.—Holotype worker. BOLIVIA, Tumupasa, W.M. Mann, leg. Deposited in the USNM. Paratypes: Seven workers deposited in the USNM; One worker and one male in each of the following: BMNH, MIZA, LACM, MCZC. One worker in MUSP. All from same locality and probably from the same nest. One specimen bears an additional label: "Mulford Biological Expedition, 1921–1922." Consultation of maps locates Tumupasa at 14°09'S 67°55'W in lowland forests of the upper Río Beni watershed.

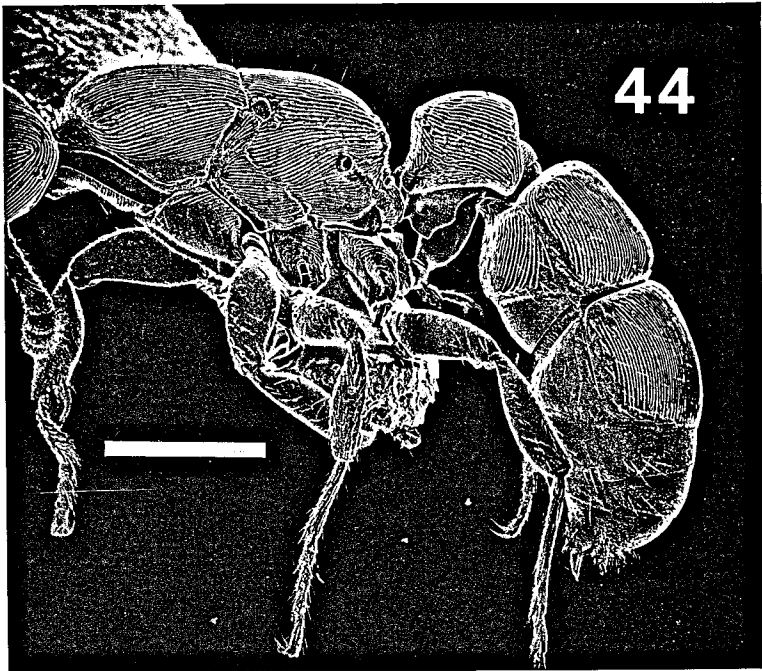
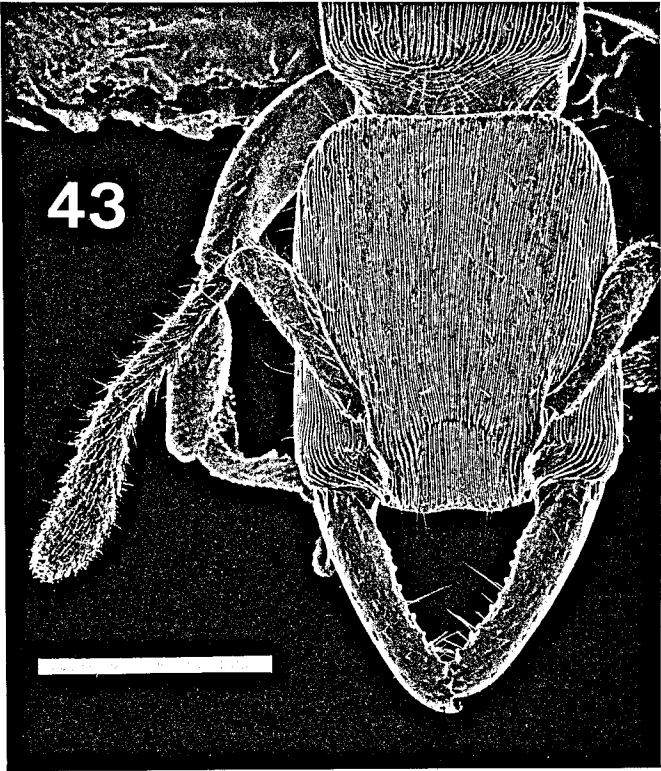
Worker.—Holotype (Paratypes) measurements: HL 0.88 (0.83–0.88); ML 0.36 (0.39–0.41); HW 0.70 (0.69–0.70); SL 0.49 (0.48–0.50); ED 0.10 (0.10–0.12); WL 1.23 (1.06–1.15) mm; CI 0.70 (0.80–0.84); SI 0.70 (0.69–0.71); OI 0.15 (0.15–0.18). n=4.

Head in frontal view elongate, lateral margins fairly parallel, vertexal margin concave; anterior lamella of clypeus laterally rounded and medianly convex; eyes situated at mid-length; antennae smooth and shining, dorsoventrally compressed widest apicad; mandibles smooth and

shining dorsally, with sparse punctae, subfalcate, laterobasally with small area of longitudinal rugae, including small sulcus never longer than one-fourth of the mandible; gula with longitudinal costulae, front of head with longitudinal striae.

Occasional transverse costulae on pronotal collar; mesosomal dorsum with longitudinal costulae, slightly thicker on metanotum and propodeum than on promesonotum; pronotal suture softly impressed, visible only in certain angles of view; metanotal suture deeply impressed but doesn't break longitudinal sculpture; declivitous propodeal face with oblique to transverse costulae and two superolateral ridges; pronotum laterally with transverse costulae, smooth and shining along ventral margin; anepisternum elongate and obliquely costulate; katapisternum and metepisternum with transverse costulae; costulae on metepisternum have same direction as on katapisternum, but costulae on lateral propodeal face are more horizontal; propodeal spiracle round and not prominently higher than surrounding sculpture; petiole slightly pedunculate, dorsally with longitudinal costulae, anterior face with transverse costulae or rugae, sometimes partially effaced, laterally with longitudinal costulae with slight oblique tendency; node in lateral view with softly convex dorsal margin, anteriorly concave; anterior and posterior faces fairly sharply separated from dorsal face; posterior face with 4–5 convex costulae; subpetiolar process varies from subquadrate anteriorly and posteriorly concave.

Anterior postpetiolar face smooth and shining; gastric terga I and II with longitudinal striae, sternum I laterally costulate, but discal area smooth and shining as is rest of gaster; procoxa anteriorly and anterolaterally smooth and shining, posterolaterally costulate; mesocoxae with transverse costulae that tend to be effaced; dorsum of metacoxa with transverse costulae and basal, low triangular lobe; tibia and femora smooth and shining. Body fer-



Figs. 43-44. Micrographs of *G. boliviensis*. Scale bars = 0.5 mm. 43, head; 44, thorax and gaster.

ruginous brown; legs and antennae testaceous.

Queen.—Unknown.

Male.—Mandibles triangular, apical edge serrate, dorsally smooth and shining; cephalic dorsum with longitudinal striae that tend to be effaced before reaching mid-ocellus, faint transverse rugae above the posterior ocelli but rest of head smooth and shining; propodeum rugose; petiole with lateral rugulae, dorsum shining, with slight roughened aspect and median longitudinal costulae; gastric sterna and terga smooth and shining; vestigial areola present.

Discussion.—Several specimens were found with determination labels, probably written by Mann, indicating that he recognized this species as new. *G. boliviensis* is near to *G. continua* and the possibility exists that the collection and study of more material may show them to be conspecific. In *G. continua* the sculpture is coarser, costate-costulate, and the mandibles are more robust, without a concave inner edge.

Etymology.—The name is derived from the name of the type locality country, Bolivia.

Gnamptogenys bruchi (Santschi)

Ectatomma (*Parectatomma*) *bruchii* Santschi 1922: 241.

Gnamptogenys bruchi (Santschi); Brown 1958: 227; Kempf and Brown 1968:92; Kempf 1969: 275; Kempf 1972:112.

Diagnosis.—Striate body sculpture with weak transverse impressions; metacoxal process is shaped as a low, triangular lobe; clypeal lamella broadly convex anterad.

Ecology.—Apparently a predator of *Trachymyrmex* and other leaf cutting ants (Kempf and Brown, 1968:92).

Comments.—Kempf (1969) notes *bruchii* as close to *hartmani* and that a synonymy could be possible. He also mentions the variability of the extent of impression of the metanotal groove and discards it as an indicator of species separation. This could

very well be only a variant of *hartmani* but due to differences of sculpture on the posterior petiole face, postpetiolar sternal process and clypeal lamella, I have chosen to conserve this name until more material can be studied. The sculpture on the dorsum of the petiole can vary from longitudinal to whorled.

Specimens Examined.—ARGENTINA, Córdoba: Alta Gracia (cotype:MCZC). BRAZIL, São Paulo: Fazenda B. Rico.

Gnamptogenys brunnea Latke, new species (Figs. 41,42)

Type Material.—Holotype worker. COLOMBIA, Chocó, 10 km SW San Jose del Palmar, Finca Los Guadales, 760 m, 2-VI-1978, C. Kugler, leg. Deposited in MIZA. Paratypes: One queen and 18 nidotype workers. Queen and 6 workers deposited in MIZA. Two workers deposited in each of the following: MCZC, LACM, BMNH, MUSP, USNM.

Worker.—Holotype (Paratypes) measurements: HL 0.90 (0.88–0.92); ML 0.30 (0.30–0.32); HW 0.74 (0.68–0.80); SL 0.74 (0.80–0.84); WL 1.20 (1.10–1.28) mm; CI 0.82 (0.77–0.87); SI 1.00 (0.95–1.09); OI 0.18 (0.16–0.18) n=5.

Cephalic dorsum longitudinally costulate; in frontal view vertexal margin concave and eyes slightly behind mid-length; mandibles triangular, with dorsal costulae, basal and apical margins with narrow smooth and shining strip that is sharply separated and lower than the rest of mandibular surface; anterior pronotal margin with 6–8 transverse costulae which arch around and become longitudinal on dorsum; mesometanotal suture well-impressed; mesonotum narrow and transverse; in lateral view dorsal propodeal face slightly depressed below rest of mesosomal dorsal margin; declivitous propodeal face distinctly separated from rest of mesosoma by low lateral ridges; mostly transverse costulae with longitudinal costulae from dorsum extending only to an-

terior one-fourth of declivitous face; petiolar node in lateral view transversely costulate and posteriorly inclined: a broad anterior convexity with sharp posterior drop and concave posterior margin; subpetiolar process shaped as an anteriorly projecting lobe; anterior postpetiolar face and sternum with transverse costulae, longitudinal on rest; costulae on the gastric tergum II finer than on preceding segment; metacoxal spine present.

Body with sparse decumbent pubescence and erect to suberect hairs; pubescence denser on legs; scapes with abundant decumbent pubescence, no erect or suberect hairs. Body reddish-brown and legs brownish-yellow.

Queen.—HL 0.98; HW 0.86; ML 0.32; SL 0.84; ED 0.18; WL 1.44 mm; CI 0.88; SI 0.97; OI 0.21. Like workers with exception of usual caste differences.

Male.—Unknown.

Discussion.—This species is close to *nigrivittrea* on account of size, posteriorly tilted petiolar node, sleek appearance, subpetiolar process shape, sparse pilosity and lack of any trace of anterior petiolar peduncle. But *nigrivittrea* is different in its piceous body coloration with dark brown legs, lack of metanotal groove, slightly more elevated propodeal spiracles, longer pilosity, and a sleeker petiolar node with a more prominent apical point.

Etymology.—The name comes from the Latin term for brown, *brunneus*.

Gnamptogenys concinna (Smith)

Ectatomma concinna F. Smith 1858:103.

Ectatomma (*Gnamptogenys*) *concinnum* (F. Smith); Mann 1916:406; Wheeler 1922:2.

Ectatomma (*Gnamptogenys*) *concinnum* var. *romani* Wheeler 1923:2; Brown 1958:227.

Ectatomma (*Gnamptogenys*) *concinnum* var. *conica* Borgmeier 1928:196; Brown 1958:227.

Ectatomma (*Gnamptogenys*) *concinnum* var. *semicircularis* Borgmeier 1929:195; Brown 1958:227.

Gnamptogenys concinna (Smith); Brown 1958:227; Kempf 1972:112; Lattke 1990:11.

Diagnosis.—A large finely striate species with transverse striae on propodeum, declivity medianly smooth; promesonotal suture weakly impressed or absent; mesometanotal suture deep and wide; metacoxal tooth absent, low crest or tubercle at most.

Ecology.—Consistently collected and observed on trees, this species is an arboreal nester. Longino found a nest inside a large, deep knothole and records prey items of the following: Heteroptera: Pentatomidae, Aradidae; Coleoptera: Cerambycidae, Histeridae, Platypodidae, Chrysomelidae, Tenebrionidae, and Passalidae. One observed foraging group was made up of 9 workers and a dealate queen. Observations of group foraging of up to 40 single-file workers, plus the following Longino observation, indicate trail and/or recruiting pheromone communication in this species. "The foragers walked with their gasters curled and touching the substrate. When they were together near the prey I could often make out a tiny white area (gland?) exposed at the very tip of the gaster, which other workers would investigate".

Comments.—Color can vary from ferruginous to light-brown, and the striae on the posterior nodal face may be effaced.

Specimens Examined.—BRAZIL, Amazonas: Ilha de Curari, (varzea); Amapa: Villa Amazonas. COLOMBIA, Meta: Reserva La Macarena, Caño La Curia, 580 m. COSTA RICA, Península de Osa: Pq. Nac. Corcovado, Llorona; Heredia: Finca La Selva. PANAMA, Isla Barro Colorado. PERU, Madre de Dios: 15 km E Prto. Maldonado, 200 m; Amazonas, Panguana, 9°37'S 74°56'W, 220 m; Tingo María: Valle de Monsón. TRINIDAD, Arima Valley, 152 m. VENEZUELA, Amazonas: Alto Río Mavaca, 2°02'N 65°06'W, 200m.

Gnamptogenys continua Mayr

Ectatomma (*Gnamptogenys*) *continuum* Mayr 1887:544.

Ectatomma (*Gnamptogenys*) *exaratum* Emery

1901:50; Brown 1958:303; Kempf 1972:112; Lattke 1990:13. NEW SYNONYMY.

Ectaomma (Gnamptogenys) continuum var. *panamensis* Santschi 1931:265; Brown 1958:228, 304.

Gnamptogenys continua (Mayr); Brown 1958:228, 304; Kempf 1972:112; Lattke 1990:12.

Diagnosis.—Mandibles with linear tendency; mesometanotal suture impressed; declivitous propodeal face with small superolateral lobes; upper half with longitudinal costulae and inferior half with transverse costulae; sternal disc of postpetiole smooth; anterior nodal face rugose with some inferior transverse costulae.

Ecology.—Collected in leaf litter samples from humid forests.

Comments.—The synonymy of *exarata* was inevitable as more material accumulated and it became impossible to separate the two forms. The gap between OD and apical scape width closed. There are changes in the gauge of the costulation, degree of anterior clypeal convexity, effacement of the sculpture, shape of the subpetiolar process, extent of the petiolar peduncle, and size (HW 0.56–0.96; HL 0.64–1.16; WL 0.88–1.62). The occiput has a median dent that is most noticeable when the occiput is smooth and shining as opposed to costulate forms. Deposited in the MCZC is a specimen from Vera Cruz that was compared with the type by Brown in 1954.

Specimens Examined.—BELIZE, Caves Branch, 4 km S Belmopan. BRAZIL, Rio de Janeiro: Itatiara; São Paulo: Fazenda Conquista, Rio Preto; Guquitiba, BRE km 76. HONDURAS, La Lima. ECUADORA, Pichinchá: Tinalandia, 16 km SE Sto. Domingo del los Colorados, 680 m. COLOMBIA, Meta: Quebrada Susumuko, 23 km NW Villavicencio, 1000 m; Magdalena: Parque Tayrona, Pueblito, 360 m. MEXICO, Vera Cruz, Tuxtla, Las Hamacas, 17 km N Santiago. PERU, Panguana, 9°37'S 74°56'W, 220 m; Huanuco: 16 km SW Las Palmas, 1000 m; Pasco: Pozuzo, 1000, SURINAM, Kartabo, Bartica Dam. VENE-

ZUELA, Barinas: 17 km SSW Ciudad Bolívar, 8°02'N 70°46'W, 240 m; Guárico: 24 km N Altagracia de Orituco, 300 m.

Gnamptogenys cuneiforma Lattke, new species

Type Material.—Holotype worker: PANAMA, Bocas del Toro, 8°47'N 82°11'W, 500m; 16/18-VII-87, D.M. Olson, leg. Deposited in MCZC. Paratypes: One worker deposited in MCZC and two workers deposited in MIZA, all with same locality data as the holotype.

Worker.—Holotype (Paratype) measurements: HL 0.90 (0.84–0.88); ML 0.62 (0.60–0.64); HW 0.84 (0.82–0.84); SL 0.82 (0.80–0.82); ED 0.20 (0.21–0.22); WL 1.40 (1.38–1.40) mm; CI 1.07 (1.02–1.05); SI 0.98 (0.98); OI 0.24 (0.26–0.28), n=4.

Head subquadrate in frontal view, sides very broadly convex, slightly wider anteriorly than posteriorly, posterior margin broadly concave, longitudinally costulate. Anterior clypeal margin with a small lamella, medianly straight and laterally rounded. A brief longitudinal carinae, thicker than surrounding sculpture, present between frontal lobes. Mandibles triangular and elongate, masticatory border concave, dorsal surface of blade convex and with longitudinal rugulae. Scapes shining and with low rugosities. Scapes without pilosity, only decumbent hairs.

Anterior pronotal face with 4–5 transverse costulae, sometimes quite rough and resembling rugae, longitudinal costulae on the dorsum posterad including the mesonotum. Metanotum and propodeum with transverse costae.

Promesonotal suture well to poorly impressed, metanotal groove well impressed. In lateral view the mesosoma has a very broadly convex dorsal margin, propodeal denticles brief and triangular, declivity concave. Sides of pronotum with regular longitudinal, slightly oblique costae. Anepisternum fulcrum shaped. Kat-episternum with a well-developed flange. Mesopleura, propodeum and dorsal two-

thirds of metapleura with transverse/oblique costae; metapleura ventrad of spiracle with longitudinal costae.

Petiole in lateral view with a low and broadly convex dorsal margin, ventral process projects anterad. Dorsally with transverse costae, posterior margin rugose. Gastric dorsum with longitudinal costulation; ventrum of postpetiole with transverse rugae along posterior half; irregular rugulae anterad to the process.

Base of foretarsus with a single stout setae opposite the strigil. Forecoxae with transverse costulae on lateral face, as well as dorsal faces of meso- and metacoxae. Legs shining and with abundant shallow punctulae. Very sparse pilosity on femora and tibiae. Color ferruginous to dark brown; mandibles, antennae and legs ferruginous.

Queen, Male.—Unknown.

Discussion.—This species may be confused with two other small *rastrata* group species: *rastrata* and *mecotyle*. It is separable from the former on account of the longer scapes (surpassing the vertexal margin), transverse costulae on the propodeum as opposed to longitudinal, and a well-defined metapleura, separated from the propodeum laterally by an impressed line, lacking in *rastrata*. The costulae of *mecotyle* have a coarse aspect in contrast with the smooth regularity in *cuneiforma*, *mecotyle* also has the striae on the scapes and dorsal mandibular surface better defined and the masticatory border lacks the concavity of *cuneiforma*.

Etymology.—The name alludes to the shape of the anepisternum.

***Gnamptogenys curvoclypeata* Lattke**

Gnamptogenys curvoclypeata Lattke 1990: 12.

Diagnosis.—Piceous species with ferruginous antenna, legs and coxae; promesonotal suture very weakly impressed, visible only with certain angles of light; meso- and metacoxae smooth and shining on median and basal lateral faces; meta-

coxae with weakly developed triangular dorsal lobe.

Ecology.—See Lattke (1990).

Comments.—See Lattke (1990).

Specimens Examined.—COLOMBIA, Amazonas: 7 km N Leticia (MCZC).

***Gnamptogenys ejuncida*, Lattke, new species (Figs. 48, 50)**

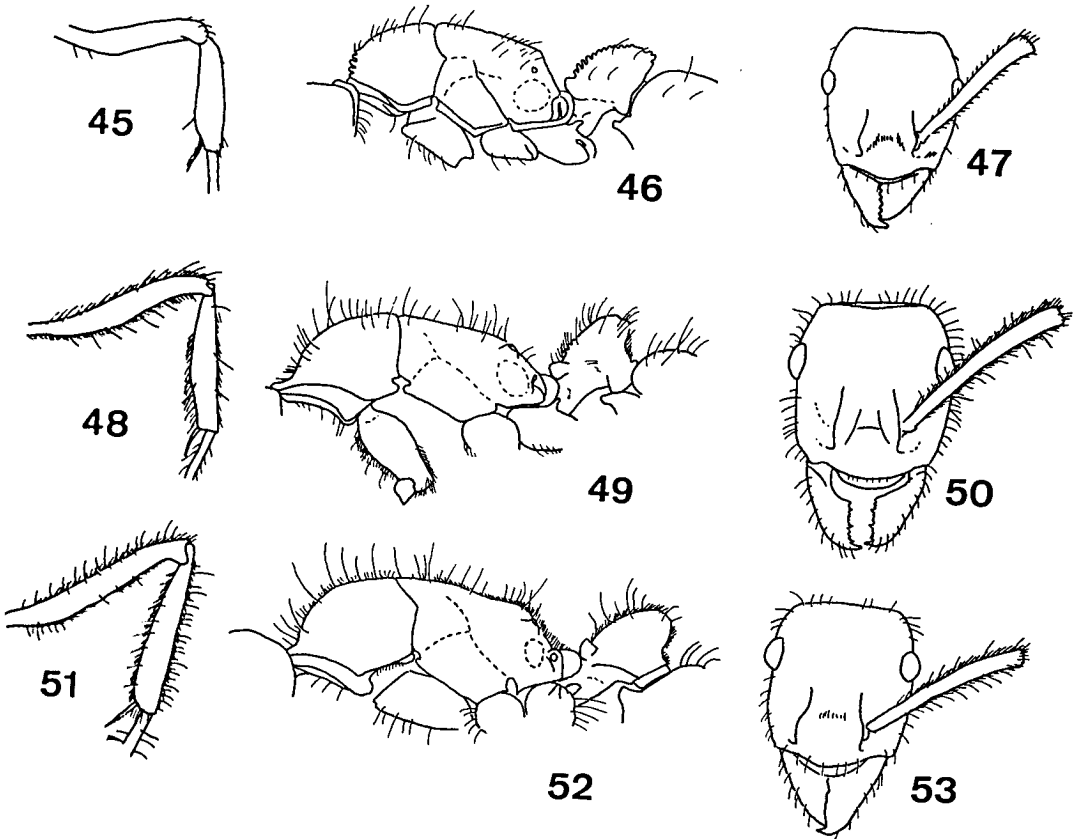
Type Material.—Holotype worker. COLOMBIA, Putumayo, Mocoa, 610 m, 4-I-77, C. Kugler, leg. Deposited in MIZA.

Worker.—Holotype measurements: HL 1.10; ML 0.26; HW 0.88; SL 1.02; ED 0.18; WL 1.54 mm, CI 0.80; SI 1.56; OI 0.21.

With head in frontal view: vertexal margins slightly convex, lateral margins broadly convex and anterior clypeal margin convex; mandibles triangular and with rugose dorsum; anterior pronotal face with six transverse costulae, dorsum with longitudinal costulae; mesonotum with anteriorly convex costulae, transverse at metanotum and posteriorly convex on dorsal propodeal face; anepisternum with three transverse costulae that descend from mesonotum; rest of mesosomal side obliquely costulate, some curve around propodeal spiracles; declivitous propodeal face with longitudinal costulae; in lateral view dorsal mesosomal outline evenly convex, with no abrupt breaks or depressions; petiolar node posteriorly inclined; in lateral view transversely costulate with convex anterior margin, concave posterior margin and overhanging apex; subpetiolar process triangular and projecting anterad. Anterior face to dorsal two-thirds of postpetiolar dorsum with transverse costulae; rest of gastric sculpture longitudinal; postpetiolar sternum anteriorly transversely costulate, posteriorly divergent; transverse costulae on procoxae and anterior faces of meso- and metacoxae; metacoxal tooth well developed. Abundant suberect hairs and pubescence on body and extremities.

Queen, Male.—Unknown.

Ecology.—Unknown.



Figs. 45-53. Lateral view of posterior leg, mesosoma and petiole, and frontal view of head. 45-47, *G. extra*; 48-50, *G. ejuncida*; 51-53, *G. pilosa*.

Discussion.—On account of size, sculpture, pilosity and posteriorly inclined petiole node this species seems to be most closely related to *pilosa*, a very similar species found in an Andean canyon NW of Cali, Colombia. The sculpture of *pilosa* is much finer and its pilosity is a bit denser, including abundant erect hairs, practically lacking in *ejuncida*. The presence of erect to suberect hairs in *pilosa* vs. subdecumbent to decumbent hairs in *ejuncida* is especially notable on the femora. In lateral view the angle formed by the junction of the dorsal and declivitous propodeal faces is greater in *ejuncida* than in *pilosa*, giving it a more slender appearance.

Etymology.—This sleek species inspired the use of the Latin word for slender, *ejuncida*.

Gnampptogenys ericae Forel, revalidated

Gnampptogenys tornata var. *ericae* Forel 1912:33; Brown 1958:229.

Gnampptogenys sulcata (F. Smith); Brown 1958:329; Lattke 1989:24.

Gnampptogenys sulcatum bufonum Weber 1938:208. NEW SYNONYMY.

Diagnosis.—Mandibles subtriangular; posterior mesosomal dorsum and propodeum with longitudinal costulae, transverse sutures barely visible under certain angles of lighting; small metacoxal tooth. Body black; antennae, legs and mandibles brown to dark brown.

Ecology.—Can be found nesting in disturbed forests and coffee plantations as well as in undisturbed forests.

Comments.—Much confusion has accu-

mulated regarding the identity of this species and the similar *sulcata*. Many previous references to *sulcata* are actually *ericae*, but the confusion makes it quite difficult to distinguish between each reference. Dr. Ivan Löbl of the MHNG kindly examined the *ericae* type and confirmed the longitudinal direction of the costulae on the posterior face of the node of the specimen. A specimen in the MCZC from Guiana with a determination label as *bufonum* in N. Weber's handwriting and another label stating "in *Bufo marinus* stomach" coincides with the information in Weber's description. Even though it has no label designating it as a type, it seems reasonable to conclude that Weber's *bufonum* is a synonym of *ericae*. For a broader discussion on the separation of the forms known as *tornata* and *sulcata* the reader should turn to the "Discussion" for *G. sulcata*. Color in this species is relatively constant but occasional ferruginous, brown or mottled specimens will turn up. Size and shape of the petiolar node does not vary as much as in *sulcata*. Workers seem to always have longitudinal costulae on the propodeal declivity, though queens may have transverse costulae.

Specimens Examined.—BOLIVIA, Rosario. COLOMBIA, Magdalena: Minca, 610 m; Guajira: Serranía de Macuira, 7 km S Nazareth, 70–200m; Meta: San Juan de Arama, 914m; La Macarena, Río Guayabero, 260m; 65 km E Puerto López. GUIANA, Forest Settlement, R. Mazaruni. TRINIDAD, Port of Spain, Federation Park. VENEZUELA, Mérida: Santa Cruz de Mora, 600m; Guárico: Hato Masaguaral; Bolívar: Campamento Río Grande, 8°07'N 61°48'W, 280 m; Anzoátegui: 20 km S El Tigre.

Gnamptogenys extra Lattke, new species
(Figs. 45–47)

Type Material.—Holotype worker. EC-UADOR, Pichincha: Tinalandia, 16 km SE Santo Domingo de Los Colorados, VI-1976, S. & J. Peck, leg. Deposited in MIZA.

Paratypes: (1) One worker with the same data as the holotype. Deposited in MCZC. (2) Two workers from COLOMBIA, Chocó: Lloró, Vereda Peñalosa, 26-III-1988, V. Jaimes, leg. One worker in BMNH and LACM, respectively.

Worker.—Holotype (Paratypes) measurements: HL 1.20 (1.10–1.12); HW 1.00 (0.94–1.00); ML 0.34 (0.30–0.34); ED 0.16 (0.14–0.18); SL 1.26 (1.00–1.20); WL 1.68 (1.44–1.50) mm; CI 0.83 (0.85–0.98); SI 1.26 (1.06–1.20); IO 0.16 (0.15–0.19) n=4.

With head in frontal view: vertexal margin straight, laterally convex with eyes slightly behind midlength, and anterior clypeal margin convex; mandibles triangular with dorsal striae; scapes relatively thick in appearance and surpassing vertexal margin; vertex with 2–3 transverse costulae; anterior pronotal face with 5–7 transverse costulae, dorsally with anteriorly arching costulae; costulae on mesonotal concentric or longitudinal; costulae on metanotum and dorsal propodeal face transverse to longitudinal, sometimes arched; declivitous propodeal face with longitudinal costulae that diverge posteriorly, basally with 2–3 transverse costulae.

Petiolar node in lateral view subquadrate, with broad anterodorsal convexity and sharp posterior drop with overhanging apex; subpetiolar apex is an anteriorly projecting lobe; anterior postpetiolar face with transverse costulae that arch back and become longitudinal posteriorly; rest of dorsal gastric costulae longitudinal, divergent on posterior postpetiolar sternum; ventral stridulitrum present on fourth abdominal segment. Scapes with abundant decumbent pilosity and no suberect or subdecumbent hairs; decumbent pilosity also present on coxae and legs, with no standing hairs; sparse suberect hairs on rest of body. Body dark brown, legs and antennae slightly lighter.

Male, Female.—Unknown.

Discussion.—This species has a fairly pointed petiolar node apex, but it doesn't

approach the extremely pointed condition of *G. acuta*. The node is more robust and subquadrate (lateral view) than in other *porcata* subgroup species and is reminiscent of the condition in *G. tortuolosa*. This species could be closely related to *G. striatula* on account of the node shape (erect) and the lacking anterior peduncle.

Gnamptogenys fernandezi Lattke

Gnamptogenys fernandezi Lattke 1990: 14.

Diagnosis.—Triangular mandibles with a smooth and shining dorsum; anterior lamella of clypeus convex; promesonotal suture lightly impressed and mesometanotal suture absent; low, elongate petiole, posterodorsally bluntly pointed; metacoxal teeth absent.

Ecology.—A rarely collected, but fairly widespread species in n South America. In Venezuela known only from 2 forested localities in the Cordillera de la Costa between 650–1100 m.

Comments.—See Lattke (1990).

Specimens Examined.—COLOMBIA: Valle: 50 m (no other data). ECUADOR. Morora: Santiago, Los Tayos. PERU, Madre de Dios: 5 km SE Prto. Maldonado, Río Tambopata, 260m; Cuzco Amazónico, 15 km NE Prto. Maldonado, 200m. VENEZUELA, Carabobo: Hacienda Palmichal, Canoabo 900 m.

Gnamptogenys gentryi Lattke, new species

Type Material.—Holotype worker. COLOMBIA, Valle, 2250 m, Insp. Pance, Reserva Natural Hato Viejo, J.B. Hillaire, leg. Deposited in MIZA. Thank you to Fernando Fernández for making the specimen available.

Worker.—Holotype measurements: HL 1.22; ML 0.32; HW 0.92; ED 0.22; SL 1.04; WL 1.64 mm; CI 0.75; SI 1.13; OI 0.24.

Head in frontal view elongate, anterior clypeal margin convex, posterior margin concave, eyes relatively flat, finely costulate throughout, though diverging at ver-

tex, with a band of three transverse costulae next to the vertexal carinae; mandibles triangular, frontal surface rugulose. Scapes mostly smooth and shining except for sparse punctulae.

Pronotal dorsum with whorled costulae almost enclosing 3 brief longitudinal costulae, rest of mesosomal dorsum with longitudinal costulae, metanotal groove deeper than pronotal suture. In lateral view the mesosoma has a convex pronotal profile that becomes an inclined and more or less straight slope that bends sharply at the propodeal declivity, which has a broadly concave profile. Node in lateral view tilted backwards, with oblique to longitudinal rugulae laterally and transverse costulae on the anterior and posterior faces, ventral process subquadrate, with anterior corner projecting more than posterior corner. Gastric tergite I mostly smooth and shining except for anterior face which has a small area of transverse costulae and the sternite with transverse striae; the rest of the gaster is smooth and shining. Color black.

Queen, Male.—Unknown.

Discussion.—This *striatula* group species is quite easy to separate from all others just considering the presence of a metanotal groove and the mostly smooth and shining gaster.

Etymology.—Named in honor of the late botanist Alwyn Gentry, he died in the line of duty in the Andes of Ecuador.

Gnamptogenys gracilis Santschi

Holcoponera gracilis Santschi 1929:468.

Gnamptogenys gracilis (Santschi); Brown 1958: 228, 232; Kempf 1972:112; Lattke 1990:17.

Diagnosis.—Finely costulae; pronotal costulae concentric to arched; mesonotum frequently with longitudinal costulae surrounded by concentric costulae; metanotum and propodeal dorsum with transverse costulae, and longitudinal on declivitous propodeal face; subpetiolar process anteriorly triangular and posteriorly angular.

Ecology.—This is an epigaeic forager known only from primary and secondary wet forests of the Guiana Shield and its remnants in the Venezuelan Amazonas, mostly between altitudes of 850–1600 m. Within the range of 1000–1200 it can be locally abundant. One record from 550 is next to Angel Falls. This suggests that proximity with the higher forested talus slopes of Auyán Tepuy could explain its occurrence at such a low elevation. This species obviously prefers cool, mesic habitats. This distribution plus climatic evidence (Schubert 1988) suggests that *G. gracilis* may have been more widely distributed in this area during the last glacial period.

Comments.—On account of size, similar sculpture, posteriorly inclined node and fair amount of pilosity, its nearest relative appears to be *pilosa*, also an apparent endemic, of the Colombian Cordillera N and NNW of Cali. An occasional specimen may have a second, smaller seta just below the prominent seta of the foretarsal base.

Specimens Examined.—VENEZUELA, Bolívar: Auyán Tepuy, Sector Aonda, 6°02'N 62°37'W, 1600 m; Auyán Tepui, Cañón del Diablo, Isla Ratón, 550 m; San Ignacio de Yuruaní, 5°00'N 61°08'W, 800 m (MIZA).

Gnamptogenys haenschi Emery

Gnamptogenys haenschi Emery 1902:27; Brown 1958:302; Kempf 1972:112.

Diagnosis.—Vertexal margin concave in frontal view; mandibles with longitudinal costulae; declivitous propodeal face with longitudinal striae superiorly and basally transverse rugae; petiolar node transverse; postpetiolar sternum mostly transversely strigulate; no metacoxal tooth.

Ecology.—This species inhabits forest and apparently nests in rotten wood as well as in soil. It has also been taken in oil palm plantations. Some specimens were collected from carrion traps baited with

iguana meat. Longino (pers. comm.) reports finding a nest beneath a rotten log; the ants burrowed into the soil on exposure.

Comments.—This species is possibly the only survivor of an otherwise extinct lineage in the genus. See discussion on phylogeny of the different species groups.

Specimens.—BOLIVIA, Lower Río Madidi; El Montero, 70 km N Sta. Cruz. COLOMBIA, Cauca: Isla La Gorgona; Guajira: Quebrada Guacoche, vic. Don Diego, 10 m; Magdalena: 4 km N San Pablo, 10°57'N 74°03'W, 550 m. COSTA RICA, Península de Osa: Corcovado, 8°28'N 83°35'W; Heredia: La Selva; 3 km S Prto. Viejo, 10°26'N 84°00'W, 50m. ECUADOR, Napo: Prto. Misahualli, 350 m. PERU, Tingo María: Valle de Monsón; Puerto Maldonado, 260m; Loreto: Ramón Castillo, 5 km NW Leticia. PANAMA, Darién: Río Tacaruna, 580m. VENEZUELA, Alto Río Siapa, 1°40'N 64°35'W, 530m.

Gnamptogenys hartmani (Wheeler)

Ectatomma (Parectatomma) hartmani Wheeler 1915:390.

Gnamptogenys hartmani (Wheeler); Brown 1958: 228, 302; Echols, 1964:137; Kempf 1972:112; MacKay 1988:127.

Gnamptogenys nigrifrons Borgmeier 1948; Brown 1958: 228, 236; Kempf 1972:114. NEW SYNONYMY.

Gnamptogenys turmalis Kempf and Brown 1968: 93; Kempf 1972:116. NEW SYNONYMY.

Diagnosis.—Superolateral corners of declivitous propodeal face with small lobes or carinae; mandibles triangular to subtriangular; metanotal groove vaguely impressed and posterior nodal face has longitudinal costulae; metacoxal dorsum with lobes; subpetiolar process subquadrate.

Ecology.—One record from soil in a banana farm and another from soil in a destroyed *Trachymyrmex* nest. These ants have on several occasions been reported as predators of *Trachymyrmex* ants (Echols, 1964:137; Kempf and Brown, 1968:94). J.

Longino (pers. comm.) reports from Costa Rican field notes of Dana Myer: "a nest was found found in leaf litter amidst the remains of a *Trachymyrmex* nest and many cut up workers and a queen of the attines were also found along with many wounded *Gnamptogenys* workers." Longino has observed this species carrying its brood in a loose 3 m column, fleeing from raiding *Eciton*. One specimen was taken from the stomach contents of *Dendrobates lecomelas*.

Comments.—Kempf and Brown described *G. turmalis* as being close to *G. nigrifrons* but slightly larger and more robust, with finer sculpturing and a uniform ferruginous color. These authors realized that *G. hartmani*, *G. nigrifrons* and *G. turmalis* were so close as to constitute possible synonyms, and they were right. The study of specimens at hand show colors vary enough to make it an unreliable character for separating species and the same is true for irregularities in the sculpture. Specimens from more southern localities have finer costulation. Also found to vary continuously was the length vs. width of the petiolar node, as well as other size indicators.

Specimens Examined.—BRAZIL, Bahia, Ilheus-Itab., km 22, (CEPEC). COSTA RICA, Peninsula de Osa: Sirena, 8°28'N 83°35'W, 50m. GUYANA, Kartabo; HONDURAS, La Lima, Zapote farm. MEXICO, Tamaulipas: 10 km W EL Encino, 23°N 08'W 99°10'W; PANAMA, Isla Barro Colorado. PERU, Valle de Chanchamayo, 800 m. USA, Louisiana: Lucky; Texas: Benton-Rio Grande State Park, 30. VENEZUELA, Amazonas, vic. Cerro Ya-Pakana.

Gnamptogenys haytiana (Wheeler and Mann)

Spaniopyne haytiana Wheeler and Mann 1911:11.
Gnamptogenys haytiana (Wheeler and Mann);
Brown 1958:228, 316; Kempf 1972:113.

Diagnosis.—Petiole node disciform, with anterior and posterior faces more or less parallel to one another, dorsal and lateral

nodal faces with transverse rugulae; metanotal groove barely impressed; propodeal spiracles mounted on turrets at mid-height of the lateral edge of declivitous propodeal face.

Ecology.—Taken from forest and coffee plantation leaf litter. The dramatic deforestation of Hispaniola has considerably reduced the range of this species.

Comments.—Endemic to Hispaniola Island. On account of the yellowish color, more pronounced curvature of the second gastric segment and different sculpture, this species is outstanding amongst the other members of its species complex. It is possible that it represents an independent development from the *strigata* complex. The holotype was examined in the MCZC.

Specimens Examined.—DOMINICAN REPUBLIC, Barahana: 2 km N Polo, 1000m.

Gnamptogenys horni Santschi

Gnamptogenys regularis horni Santschi 1929:475.
Gnamptogenys horni Santschi; Brown 1958:228, 235, 316; Kempf 1961:491; Kempf 1972:113; Lattke 1990:17.

Diagnosis.—Subtriangular mandibles; dorsum of petiolar node with posteromedian longitudinal costulae, transversely arched anteriorly; episternal costulae curve on to declivitous propodeal face. Body dark brown; legs and antennae ferruginous.

Ecology.—A series was taken from the stomach of *Colostethus nubicola*. See Lattke 1990.

Comments.—This common species has a wide range in the neotropics. There is fair size variation and smaller specimens usually have more vermiculate costulation. The position of the propodeal spiracle can vary from mid-height to below mid-height and the metacoxal tooth from triangular to denticulate. Nests of small forms can sometimes be found in the same locality as larger forms. Intermediates were found in other localities. A specimen labelled as a "cotype" was examined in the MCZC.

Specimens Examined.—BRAZIL, Amazonas: Rio Taruma; Benjamin Constant; Reserva Ducke; via Manaus–Itacoatiara km 50; Manaus; Rondonia: Vilhema; Pará: Carajás; Utinga Tract vic. Belém. BOLIVIA, Caranaví, vic. radio, 800m. COLOMBIA, Chocó, Río Napipi. ECUADOR, Pichincha: Estación Río Palenque; Sucua; Morona: Santiago, Los Tayos; Esmeraldas: 48 km S Atacames. GUYANA, Kamakusa. PANAMA, Isla Barro Colorado. PERU, Panguana, 9°37'S 74°56'W, 220m; Tingo María: Valle del Monsón. SURINAM, Tambahredjo; Dirkshoop; La Poolle; Maripahueuei, Vank. VENEZUELA, Amazonas: Alto Río Mavaca, 2°02'N 65°06'W, 200m; Alto Río Siapa, 1°40'N 64°35'W, 600m.

***Gnamptogenys ilimani* Lattke,**
new species

Type Material.—Holotype worker. BOLIVIA, 22 km N Caranavi, Vivero Ilimani, 1700 m, 22-VI-81, C. Kugler, leg. Primary forest clearing with *Cinchona*, nest in rotten wood. Deposited in the MIZA. Paratypes: paranidotypic workers from the same nest as the holotype. Deposited in each of the following: BMNH, LACM, MUSP, MCZC, MIZA.

Worker.—Holotypes (Paratypes) measurements: HL 0.90 (0.84–0.90); HW 0.78 (0.72–0.78); ML 0.30 (0.26–0.32); ED 0.14 (0.14–0.18); SL 0.70 (0.70–0.72); WL 1.20 (1.12–1.20) mm; CI 0.87 (0.84–0.88); SI 0.90 (0.92–0.97); OI 0.19 (0.18–0.27) n=5.

Coarsely costulate *strigata* group species. With head in frontal view vertexal margin convex; anterior pronotal face with 3–4 costulae that sharply bend back laterally to become longitudinal; declivitous propodeal face with longitudinal costulae; node anteroposteriorly compressed, its posterior face sharply marginate laterally with a flat to slightly concave surface and effaced sculpture; anterior postpetiolar face with 2–3 transverse costulae, rest longitudinal; postpetiolar sternum with longitudinal costulae; lateral mesocoxal face with oblique, rough costulae and that

of metacoxae with rough rugulae; metacoxal tooth low and triangular. Body black with yellow-brown legs and scapes; abundant appressed pilosity on legs and scapes, but no standing hairs.

Queen.—Measurements: HL 0.88 (0.88); HW 0.72 (0.74); ED 0.20 (0.18); SL 0.72 (0.72); WL 1.28 (1.20) n=2. Differences from workers are the usual; caste differences, though the node is more disciform.

Male.—Unknown.

Discussion.—This species is nearest to *G. strigata* and *G. pittieri* but they are separable on several on several accounts: the posterior petiolar node face is not sharply set off and has raised costulae; in dorsal view their node is anteriorly convex, not straight; standing hairs on the body and especially the scapes are abundant, scape pilosity is longer. In *G. pittieri* the anterior transverse costulae of the pronotum curve around gently at the sides.

Etymology.—The species name alludes to the type locality.

***Gnamptogenys ingeborgae* Brown**

Gnamptogenys ingeborgae Brown 1992:279.

Diagnosis.—Mandibular masticatory margin denticulate, promesonotal suture present, at least partially, and the longitudinal costulae on the propodeal dorsum and postpetiolar tergite is frequently ill-defined to effaced.

Ecology.—A specialized millipede feeder from Colombia. See Brown 1992.

Comments.—See Brown 1992.

Specimens Examined.—COLOMBIA, Cundinamarca, Bogotá–Villavicencio road, km 79, 1100 m (type series: MCZC).

***Gnamptogenys interrupta* Mayr**

Ectatomma (*Gnamptogenys*) *interruptum* Mayr 1887:543.

Gnamptogenys interruptum (Mayr); Mann 1922:3; Brown 1958:228, 303; Kempf 1968:377; Kempf 1972: 113; Lattke 1990:18.

Diagnosis.—Sublinear mandibles. Cephalic dorsum, mesosoma, and gastric ter-

gum I with longitudinal costulae; gastric tergum II smooth; pleura also with smooth patches; metacoxal tooth absent. Body reddish brown; legs and antennae ferruginous.

Ecology.—Found in humid forests of lowlands and mountains (cloud forest). Taken from leaf litter samples and beneath bark of rotting logs on ground.

Comments.—Lateral mesosomal costulae can be effaced to a variable degree and the second gastric segment can occasionally have weak longitudinal costulae, medianly effaced. Declivitous propodeal face with longitudinal costulae and weakly developed anterolateral lobes.

Specimens Examined.—COLOMBIA, Magdalena: 3 km SE Minca, 11°08'N 74°06'W, 1050m; Valle: Puerto Merizalde, 10 m. COSTA RICA, Puntarenas: Monteverde, 10°18'N 84°48'W, 1500m. HONDURAS, Lombardia; JAMAICA, Mandeville.

Gnamptogenys kempfi Lenko

Gnamptogenys kempfi Lenko 1964:257; Kempf 1972:114.

Diagnosis.—Mandibles subtriangular, dorsally smooth and shining. transverse costulae on mesosomal dorsum and node, no apparent transverse sutures on mesosomal dorsum. Propodeal spiracle large and metacoxal tooth present.

Ecology.—Apparently from lowland forest, one nest was found in rotten wood on the ground.

Comments.—A widespread but uncommon species.

Specimens Examined.—COLOMBIA, Amazonas: 7 km N Leticia. PERU, Pangana, 9°37'S 74°56'W, 220m (MCZC).

Gnamptogenys lanei Kempf

Gnamptogenys lanei Kempf 1960:388–90; Kempf 1968:377; Kempf 1970: 325; Kempf 1972:114.

Diagnosis.—Relatively small eyes; clypeal lamella medianly concave; promesonotal suture vestigial and small denticles on

the propodeum; node elongate, with transverse costulae.

Ecology.—Its morphology puts it in the *rastrata* group of millipede hunters.

Comments.—Kempf 1968:377 reports a series with transverse costulae on the anterior pronotal face, differing from the longitudinal sculpture of the type series.

Material.—BRAZIL, Pará: Belem, Rio Guama (MUSP).

Gnamptogenys laticephala Lattke, new species (Figs. 54, 55)

Type Material.—Holotype worker. EC-UADOR, Guayas: 3 km S Bucay, 24-VII-73, W.L. Brown, leg. Deposited in MCZC.

Worker.—Holotype measurements: HL 1.71; ML 1.01; HW 1.94; SL 1.53; ED 0.34; WL 2.32 mm; CI 1.13; SI 0.79; OI 0.18.

Head in frontal view broad, vertexal margin fairly straight, lateral margins slightly convex and anteriorly diverging; eyes large and situated at cephalic mid-length; anterior clypeal lamella broadly concave with lateral triangular teeth near mandibular insertions; clypeus with two small anteriorly projecting lobes between anterior border of antennal fossae and anterior lamella; cephalic dorsum with longitudinal rugae that diverge slightly posterad on to vertex; rugae between frontal lobes and eyes more irregular than rugae between and behind frontal lobes; abundant piligerous punctures present. Antennal scapes smooth and shining, surpassing vertexal margin; gula with median longitudinal carinae and transverse costae at each side; mandibles falcate, longitudinally costulate with interior glabrous sulcus that ends at apical tooth, basal tooth marks the end of basal margin and is followed by two more pre-apical teeth; anterior pronotal face opaque, not as shiny as rest of pronotum and with faint transverse rugulae; mesosomal dorsum with parallel longitudinal costulae, promesonotal suture well impressed but does not break longitudinal sculpture, mesomet-

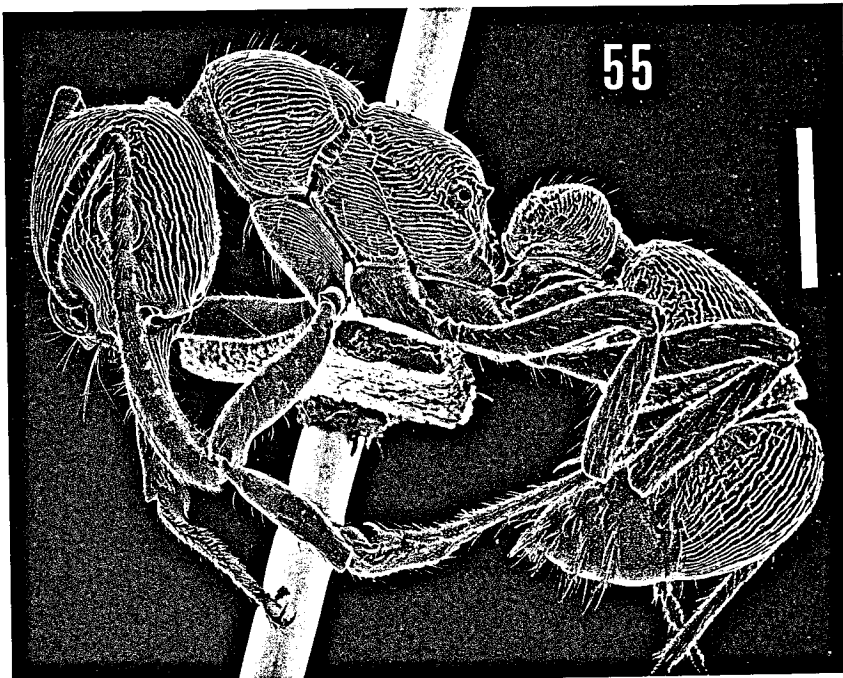


Fig. 54-55. Micrographs of *G. laticephala*. Scale bars = 1.0 mm. 54, head; 55, body.

notal suture deep and interrupting sculpture except for some ridges that join a few costulae on either side of suture; lateral pronotal face with slightly oblique parallel costulae; pronotal-mesopleural suture very broad and deep; meso- and metepisterna with parallel, longitudinal costulae; mesometepisternal suture well impressed and metepisternal-propodeal suture distinct; metepisternal lobe well developed; declivitous propodeal face with longitudinal costulae; petiolar node in lateral view low, anterodorsal margin convex and posterodorsal margin sharply convex; transversely costulate; subpetiolar process anteriorly triangular, with slighty rounded posterior lobe.

Postpetiolar costulation longitudinal, weakly roughened and becoming rugulose laterally, ventrally with transverse costulae that tend to fade medially; gastric tergum II strongly vaulted anteroventrally with dorsal and lateral sculpture as on preceding segment; apical gastric segments with faint transverse strigulae, tending to smooth and shining; anterior face of procoxae smooth and shining laterally with oblique costulae; meso- and metacoxae laterally smooth and shining, dorsally transversely costulate; metacoxal teeth well developed; body with sparse suberect and decumbent hairs, longest on gastric apex and clypeus, no appressed pilosity on scapes, just suberect and decumbent hairs. Mesosoma dark reddish brown; head, node and gaster darker; legs and antennae brown; mandibles brown to yellow brown.

Queen, Male.—Unknown.

Discussion.—The two lobes between the antennal fossae and clypeal lamella distinguish this species from all other New World members of the group, which lack such lobes, including its closest relative, *banksi*. Other characters in which *banksi* differs are the following: areolate sculpture on the cephalic dorsum, occiput and anterior pronotal face with transverse rugae, deep lateral and mesonotal pits for

the spiracles (such pits lacking in *fraudatrix*), pronotal suture interrupts sculpture, and the inner mandibular mandibular sulcus only reaches the basal angle. In general the sculpture of *banksi* is rougher, mostly of gaster I, which is reticulate rugose and gaster II has rough, widely spaced, dorsal longitudinal rugae, becoming more irregular laterally. The form of the pronotal-mesopleural suture and the lobes formed by the pronotum and anepisternum at the base of the suture are reminiscent of some *minuta* group species. The possibility exists that this could be an aberrant specimen of *banksi* (it was found determined as such), but given the observed differences I have opted for the most conservative course. It is hoped that the capture of additional specimens may throw more light onto the status of *laticephala*.

Etymology.—The name alludes to the relatively broad head when seen in frontal view.

Gnamptogenys lineolata Brown

Gnamptogenys lineolata Brown 1992:275.

Diagnosis.—Head in frontal view subquadrate, scapes smooth and shining; mandibles denticulate; sculpturing of body striate, lacking propodeal denticle.

Ecology.—A specialized millipede feeder endemic to Hispaniola.

Comments.—See Brown 1992.

Specimens Examined.—DOMINICAN REPUBLIC, La Vega, La Cienaga, 1100 m.

Gnamptogenys lucaris Kempf

Ectatomma tornatum Luederwalt 1926:236 (nec Roger 1862).

Gnamptogenys lucaris Kempf 1968:379; Kempf 1972:114.

Diagnosis.—Mandibles subtriangular; clypeal lamella laterally bluntly rectangular, not acutely dentate; propodeum with longitudinal costulae; node low, its declivitous face narrow.

Ecology.—Luederwalt (1926) reports a

specimen on a shrub devouring the remains of a beetle.

Comments.—This species is very close to *G. siapensis* and the possibility exists that they are conspecific.

Specimens Examined.—None.

Gnamptogenys mecotyle Brown

Gnamptogenys mecotyle Brown 1958:318; Kempf 1972:114.

Diagnosis.—Promesonotal suture and metanotal groove impressed but not breaking sculpture; propodeal spiracle opening large and round, right behind teeth; metacoxal teeth long and sharp; occipital carinae wide and visible in frontal view; anterior clypeal lamella laterally rounded and anteriorly straight to very broadly convex.

Ecology.—Millipede feeder captured in litter samples from wet forest. Some specimens found in stomach contents of *Dendrobates histrionicus*.

Comments.—The cephalic sculpture can vary from evenly costulate to roughly rugose and the petiole length vs. width is also variable.

Specimens Examined.—COLOMBIA, Antioquia, Providencia, Estación Biológica; Chocó: Serranía de Baudó, Camino de Yupe, 500–700m; Amazonas: 7 km N Leticia. COSTA RICA, Puntarenas: 6 km SW Monteverde. 10°16'N 84°50'W, 900m. PANAMA, Isla Barro Colorado.

Gnamptogenys mediatrix Brown

Gnamptogenys mediatrix Brown 1958:362; Kempf 1972:114.

Diagnosis.—Mandibles elongate and triangular, their basal $\frac{2}{3}$ rugulose and apical $\frac{1}{3}$ smooth and shining; clypeal lamella medianly concave; scapes with no erect hairs; petiolar costulation mostly transverse, node broader than long; metacoxal teeth very slender, propodeal teeth short.

Ecology.—Apparently of lowland forests, one series taken from a varzea habitat. Its morphology puts it within the *ras-*

trata group, and it is quite probably a millipede hunter.

Comments.—Rarely collected, it is a close relative of *G. laticephalo*.

Specimens Examined.—BRAZIL, Amazonas: Ilha de Curarí; Pará; Igarapé Maná (MCZC).

Gnamptogenys menozzii (Borgmeier)

Ectatomma (*Parectatomma*) *menozzii* Borgmeier 1928:32

Gnamptogenys menozzii (Borgmeier); Brown 1958: 228, 316, 321; Kempf 1972:113

Ectatomma (*Parectatomma*) *schubarti* Borgmeier 1948:198. NEW SYNONYMY.

Gnamptogenys schubarti (Borgmeier); Brown 1958:316; Kempf 1960a:390; Kempf 1972:114.

Diagnosis.—Eyes convex; mandibles; promesonotal suture impressed but not deep, metanotal groove very deep; propodeal teeth short; mesosoma longitudinally costulate.

Ecology.—Found in forested areas, including montane forests.

Comments.—Borgmeier described *G. schubarti* upon characters always "a bit more" than for *G. menozzii* and it is curious to note how authors frequently refer to these two forms together when discussing their differences from other species. Brown (1958:316) discusses differences between the two forms: size, number of costulae, color and the shape of the subpetiolar process. He also admits that the forms could belong to one species. Size differences between the two forms overlap and the color and gauge of the costulation are also continuously variable. The differences in the shape of the subpetiolar process are well within infraspecific variation, at least as observed in other *Gnamptogenys*.

Specimens Examined.—BRAZIL, Rio Grande do Sul (*menozzii* cotype: MUSP); Sao Paulo: Monte Alegre, 900m (*schubarti* cotype: MUSP); Rio Corocovado; Espiritu Santo: Res. Nova Lombardia, 4 km N Santa Tereza, 900 m.

Gnamptogenys mina (Brown)

Holcoponera mina Brown 1957:494.

Gnamptogenys mina Brown 1958:220, 228; Kempf 1972:114; Lattke 1990:18.

Diagnosis.—Mandibular dorsum smooth and shining and apex of scapes surpassing the vertexal margin; declivitous propodeal face flat and separated from the dorsal face by a sharp angle; propodeal spiracles elevated at the apex of cylindrical tubercles.

Ecology.—Found in leaf litter and earth samples from humid forests.

Comments.—The series from near Kavanayen show very sharply defined costulae with fine vermiculation in contrast with the glazed and effaced aspect of other series.

Specimens Examined.—COLOMBIA, Putumayo: Villa Garzón (MCZC). VENEZUELA, Bolívar: 10 km E Kavanayen, 1200 m (MIZA).

Gnamptogenys moelleri (Forel)

Holcoponera moelleri Forel 1912:34; Mann 1916:404.

Holcoponera teffensis Santschi 1929:449. NEW SYNONYMY.

Holcoponera teffensis var. *concinna* Santschi 1929:449 (nec. F. Smith 1858); Brown 1958:229.

Holcoponera moelleri var. *splendens* Santschi 1929:450; Brown 1958:228.

Gnamptogenys moelleri (Forel); Brown 1958:329; Kempf 1972:113; Kempf 1976:51.

Gnamptogenys teffensis (Santschi); Brown 1958:329; Kempf 1972:115; Lattke 1990:24.

Diagnosis.—Slightly roughened costulae; pronotum with concentric costulae; posterodorsal mesosomal face with longitudinal costulae; subpetiolar process subquadrate, sometimes anteriorly projecting into a lobe.

Ecology.—Epigaeic forager of mostly lowland forested areas.

Comments.—Comparison of specimens determined as *G. moelleri* with *G. teffensis* forms reveal nothing beyond normal infraspecific variation. Santschi described *G.*

teffensis as a relative of *G. striatula* differing in gauge of costulation, pilosity, and size. The use of length vs. width of the funicular segments in separating *G. moelleri* from *G. teffensis* is useless as even in members of the same nest series the ratio will differ either way.

Specimens Examined.—ARGENTINA, 50 km S. Oran. BRAZIL, Amazonas: Fazenda Esteio, 80 km NNE Manaus, 2°25'S 59°46'W, 80m. COLOMBIA, Amazonas: 7 km N Leticia; Putumayo: 5 km S Mocoa, 610m; Meta: Río Guayabero, Isla Angostura, 279 m; Reserva La Macarena, 580m; Chocó: Finca Los Guaduales, 800m; Nariño: 28 km SE Mocoa, 510m. ECUADOR, Napo: Limoncocha, 250m; 59 km E Quevedo, Los Ríos, 2000m; PARAGUAY, Neembuca, Pilar. PERU, Panguana, 9°37'S 74°56'W, 220m; Puerto Maldonado, 260m. VENEZUELA, Barinas: 17 km SW Ciudad Bolivia, 8°04'N 70°48'W, 240 m.

Gnamptogenys mordax (Smith)

Ponera mordax F. Smith 1858:98.

Ponera nodosa Latreille 1802:217; Brown 1958:228.

Ectatomma (*Gnamptogenys*) *mordax* (Smith); Emery 1896:49.

Gnamptogenys mordax var. *purensis* Forel 1912; Brown 1958:228.

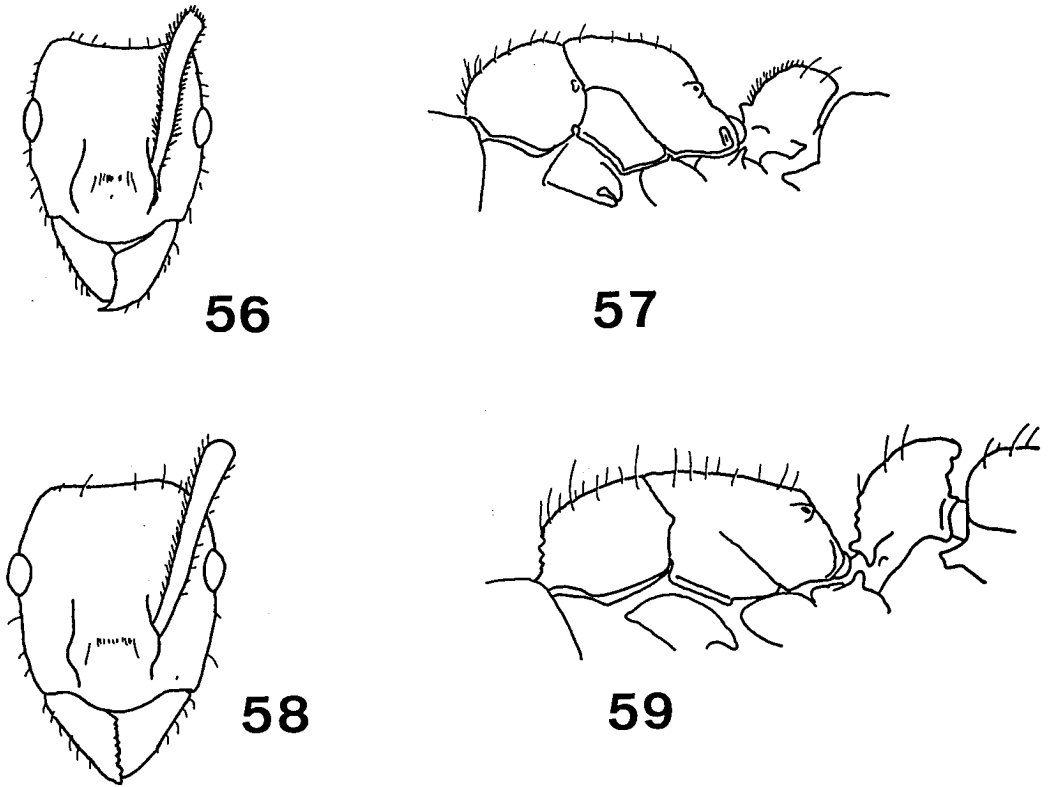
Gnamptogenys mordax (Smith); Mann 1922:3; Brown 1958:319; Kempf 1972:113; Kempf 1976:51; Lattke 1990:19.

Gnamptogenys mordax var. *sebastiani* Borgmeier 1937:220; Brown 1958:228.

Diagnosis.—Mandibles subtriangular; declivitous propodeal face transversely costulate; gastric tergum II can vary from smooth to longitudinally costulate or costulate-rugose. Body very dark, brown, almost black; legs dark brown. Smaller individuals can be confused with *G. continua*.

Ecology.—A common dweller of humid forests.

Comments.—Size (HW 1.08–2.08; WL 1.66–2.92 mm) and sculpture patterns of



Figs. 56–59. Frontal view of head, and lateral view of mesosoma and petiole. 56–57, *G. ilimani*; 58–59, *G. nigrivitrea*.

this widespread and timid species is quite variable.

Specimens Examined.—COSTA RICA, Heredia: 17 km N. Volcán Barba, 10°17'N 84°05'W, 880 m. GUYANA, Kaietur. MEXICO, Chiapas: Jetja. PERU, Panguana, 9°37'S 74°56'W, 220 m; Tingo María: Monsón Valley; 69 km E Tingo María, 1200m. VENEZUELA, Amazonas: Alto Río Siapa, 1°40'N 64°35'W, 600m.

Gnamptogenys nana Kempf

Gnamptogenys nana Kempf 1960b:422; Kempf 1972:113.

Parעתatomma dina Kusnezov, 1969:35; Kempf 1978:35.

Diagnosis.—Head subquadrate, mandibles subtriangular with striae at base, clypeal lamella straight, no transverse mesosomal impressions, propodeal declivity with vertical costulae.

Ecology.—Unknown. Its nearest relatives, *horni* and *regularis* include beetles as a significant part of their diets, while *horni* also preys on ants.

Comments.—A rarely collected species, the specimen mentioned below is topotypic (MCZC).

Specimens Examined.—BRAZIL, São Paulo: Agudos.

Gnamptogenys nigrivitrea Lattke, new species (Figs. 58, 59)

Type Material.—Holotype worker: COLOMBIA, Valle: Reserva Forestal de Yotocó, 3°50'N 76°25'W, 42 km NNE Cali, 1100–1500 m, 6-I-84, W.P. MacKay, leg. No. 7221. Deposited in MIZA. Paratype: One worker with same locality data as holotype, deposited in LACM.

Worker.—Holotype (paratype) measure-

ments: HL 1.10 (1.10); HW 0.86 (0.82); ML 0.86 (0.82); ED 0.14 (0.12); SL 0.82 (0.84); WL 1.40 (1.36) mm; CI 0.79 (0.79); SI 0.95 (1.02); OI 0.16 (0.15). Head elongate; fairly parallel sided in frontal view; posterior margin slightly concave; clypeal lamella widest medianly, giving it a bluntly pointed aspect; eyes moderately protuberant. Mandibles triangular and shallowly costulate; no trace of mesometanotal suture; pronotum anterolaterally convex; declivitous propodeal face longitudinally costulate; metacoxal tooth triangular; node posteriorly inclined, in lateral view with a broadly convex anterior margin and a bluntly pointed apex which slightly overhangs the posterior margin, in dorsal view with longitudinal costulae; subpetiolar process is an anteriorly projecting lobe; anterior face of postpetiole with 3 transverse costulae, costulation longitudinal on dorsal face; postpetiolar sternum with distinct costulation; scape with few standing hairs and moderate amount of decumbent pilosity. Body black; antennae, legs, metapleural gland area, and gastric apex brown. Coxae very dark brown.

Female, Male.—Unknown.

Discussion.—The closest species to *G. nigrivitrea* is *G. brunnea*, but its well impressed mesometanotal groove, angulate anterolateral pronotal area and depressed apical and basal mandibular margins permit easy separation.

Etymology.—The species name is derived from the Latin adjectives for black, *nigra*, and for glassy, *vitrea*, and alludes to the black and shining sculpture.

Gnamptogenys perspicax
Kempf and Brown

Gnamptogenys perspicax Kempf and Brown 1970: 316; Kempf 1972:114.

Diagnosis.—Eye slightly behind cephalic mid-length; scape longitudinally striate with abundant standing hairs; petiole node more or less evenly convex; postpe-

tiolar sternum with transverse costulae or rugae.

Ecology.—A millipede feeder found in humid forests.

Comments.—Apparently a sister species of *bispinosa*.

Specimens Examined.—ECUADOR, Pichincha, Estación Río Palenque (MCZC).

***Gnamptogenys pilosa* Latke,**
new species
(Figs. 51–53)

Type Material.—Holotype worker. COLOMBIA, Valle: Calima, Cañón El Pital, F. Castaño, leg. Deposited in MIZA. Paratypes: Three workers with same locality data as holotype. One deposited in each of the following: LACM, BMNH, MCZC.

The late Mr. F. Castaño kindly provided additional information about the type locality. The site is by a stream called Quebrada El Pital (tributary of Río Calima) in a gorge 900–1300 m above sea level. Approximate coordinates: 3°08'N 76°40'W. The site will soon be flooded due to construction of a dam. The specimens were found on leaf litter in a cloud forest.

Worker.—Holotype (paratypes) measurements: HL 1.44 (1.40–1.48); HW 1.20 (1.20–1.22); ML 0.54 (0.46–0.54); ED 0.28 (0.28–0.30); SL 1.46 (1.50–1.57); WL 2.00 (2.00–2.06) mm; CI 0.83 (0.81–0.86); SI 1.21 (1.25–1.28); OI 0.23 (0.23–0.25) n=4.

With head in frontal view, vertexal margin fairly straight, sides broadly convex; anterior clypeal margin convex, lamella well developed; eyes prominent on posterior one half of head; mandibles triangular, apical margin denticulate, dorsum striate; cephalic dorsum with longitudinal parallel striae, diverging posterad at vertex; 1–2 transverse striae parallel to occipital carina; anterior pronotal face transversely striate; dorsal mesosomal surface, including all of propodeum, longitudinally striate; striae curve around propodeal spiracles with no transverse striae between spiracles; lateral pronotal surface obliquely to transversely striate, striation

on pleura and lateral propodeal face parallel with dorsal striae; inner procoxal faces punctate, anterolaterally transversely striate; lateral faces of meso- and metacoxae weakly striate; metacoxa with well-developed tooth.

Petiolar node transversely striate, low; viewed laterally with convex anterior margin and concave posterior margin, apex overhanging; subpetiolar process with a projecting anterior lobe and subquadrate posteriorly; transverse striae anteriorly on gastric tergum, up to three-fourths length of tergum, rest of gaster longitudinally striate; anteroventral postpetiolar process prominent; sternite with longitudinal striation, diverging caudad; abundant erect to suberect hairs on body and extremities; abundant pilosity on coxae, propodeum, petiole, antennae and legs.

Queen, Male.—Unknown.

Discussion.—This is the hairiest of all *Gnamptogenys* species. On account of size, slender habitus, posteriorly inclined petiolar node, fine costulation, and abundant pilosity its nearest relatives appear to be *G. gracilis* and *G. ejuncida*. The sculpture of *ejuncida* is coarser, the pilosity is not as dense and the presence of erect hairs is considerably less. The break between the dorsal and declivitous propodeal faces is sharper in *G. pilosa*, giving it a more robust aspect. *G. gracilis* is an endemic from the Guiana Shield area, and has the postpetiolar sternal disc smooth and shining.

Etymology.—The species name is derived from the Greek word for hair: *pilos*.

Gnamptogenys pittieri Lattke

Gnamptogenys pittieri Lattke 1990:21.

Diagnosis.—Sculpture with rough aspect; frontal lobes each with a median emargination; eyes protuberant and subglobular; propodeal spiracles mounted at the apex of protuberances.

Ecology.—Hypogeic leaf litter (including

bamboo) dweller of cloud forests of the Venezuelan Cordillera de la Costa.

Comments.—The series from near Tejerias differs from the type series in having the notch on the frontal lobes shallower, the propodeal spiracles on higher turrets, finer costulae on the anterior postpetiolar face and metacoxal spines more acute.

Specimens Examined.—VENEZUELA, Aragua: Pq. Nac. Henri Pittier, vic. Rancho Grande, 1500m; 17 km S Las Tejerias, 1300 m (MIZA).

Gnamptogenys pleurodon (Emery)

Ectatomma (Holcoponera) pleurodon Emery 1896: 47.

Holcoponera emeryi Santschi 1929: 463 (nec Forel 1901).

Holcoponera vidua Santschi 1929:467; Brown 1958:229.

Gnamptogenys pleurodon (Emery); Brown 1958: 320; Kempf 1961:390; Kempf 1970:325; Kempf 1972:114; Lattke 1990:22.

Diagnosis.—Pronotum with concentric costulae; mesonotum with longitudinal costulae, sometimes surrounded by concentric costulae; anterior postpetiolar face with 3–4 transverse costulae and dorsal face with longitudinal costulae; metacoxal tooth acicular. Body dark brown, legs brown.

Ecology.—Kempf (1970) notes a nest preference for pre-existing cavities in plants. It is also a frequent forager on trees and shrubs. Usually found in lowland to premontane humid forests.

Comments.—An occasional specimens may have vertical costulation on the declivitous propodeal face, as in *striatula*, but the backwards tilt of the petiolar node and its brief anterior peduncle will identify *pleurodon*.

Specimens Examined.—BOLIVIA, Tumpasa. BRAZIL, Amazonas: Benjamin Constant, Fazenda Esteio, 80 km NNE Manaus, 80 m; Iriboca, Pirelli Plantation. COLOMBIA, Amazonas: 7 km N Leticia; Putumayo: 5 km S Mocoa, 610m. ECUADOR, Napo: Sushijindi; Tena, 400m. PERU, Ma-

dre de Dios: Estación Biológica Cocha Cashu, 400; Tingo María: Yurac, 108 km E Tingo María. SURINAM, Brownsberg Natuur Park. VENEZUELA, Amazonas, Alto Río Mavaca, 2°01'N 65°07'W, 200m; Bolívar, Auyán Tepui, Cañón del Diablo, Isla Ratón, 500m.

Gnamptogenys porcata (Emery)

Holcoponera porcata Emery 1896:48.

Holcoponera magnifica Santschi 1921:81. NEW SYNONYMY.

Gnamptogenys magnifica (Santschi); Brown 1959:320; Kempf 1972:113.

Gnamptogenys porcata (Emery); Brown 1958:320; Kempf 1972:114; Lattke 1990:23.

Diagnosis.—Costate species, median longitudinal costae on pronotum inscribed anteriorly by transverse costae; postero-dorsal mesosomal sculpture variable: concentric ovaloids with longitudinal or transverse orientation, or with longitudinal costae inscribed within whorls; piceous body with ferruginous legs.

Ecology.—A dweller of premontane to montane humid forests. J. Longino (pers. comm.) found an incipient nest in *Cecropia insignis*. One nest midden contained mostly the remains of beetles: scolytids, bostrichids, curculionids, besides isopods. Nests from one population (Venezuela, Táchira) consistently had their brood chambers irregularly wall-papered with the remains of pupal cocoons.

Comments.—Santschi described *magnifica* as close to *porcata* but differing in its larger size and the transverse costulae on the posterior dorsal mesosoma. Brown (pers. comm.) studied the *magnifica* type in 1963 and noted it was "very close" to *porcata* with the former slightly larger and with a higher, thinner node as seen laterally. Specimens in the USNM from Bolivia collected by Mann during 1956 bear anonymous *Holcoponera magnifica* determinations. The study of series from Venezuela representing several colonies from different populations show great variability for dorsal mesosomal sculpturing. Size differ-

ences between the two forms are no more than infraspecific. One Honduran worker has a wide, lobe-like subpetiolar process.

Specimens Examined.—BOLIVIA (no other data); COLOMBIA, Antioquia: Río Porce, 1020m; Cundinamarca: above Tena, 1300–1600 m; Valle: 3.2 km above Río Agua Clara, old Cali-Buenaventura rd; Río San Juan (tributary of Río Digua), vic. Queremal, 1300m; Municipio Buenaventura, 650 m. COSTA RICA, Río Toro Amarillo, vic. Guapiles, < 40 m; Heredia: 10°19'N 84°43'W, 800m. ECUADOR, Pichincha: Tinalandia, 16 km SE Sto. Domingo de los Colorados, 680m. HONDURAS, 14 km S La Ceiba; Lombardia. VENEZUELA, Táchira: vic. Siberia, 39.7 km WNW San Cristóbal, 1200m; Trujillo: 15 ESE Boconó, 1160m.

Gnamptogenys rastrata (Mayr)

Ectatomma (*Parectatomma*) *rastrata* Mayr 1866:89.

Gnamptogenys trigona Emery 1905:114; Brown 1958:321; Kempf 1972:116. NEW SYNONYMY.

Gnamptogenys rastrata (Mayr); Brown 1958:322; Kempf 1972:114; Kempf 1976:52.

Diagnosis.—Antennal scapes surpass vertexal margin by no more than their apical width; triangular and edentate mandibles with a varying degree of costulae and rugae; small tubercle-like propodeal teeth next to conspicuous spiracles which are slightly elevated above rest of surrounding cuticle; postpetiolar sternum with median longitudinal smooth and shining areas.

Ecology.—Captured in wet forests, including montane areas. A millipede feeder.

Comments.—*G. trigona* was separated from *rastrata* on account of differences in the gauge and form of the costulation, as well as size. Variability of mandibular sculpture on basal flange and dorsum is nothing beyond infraspecific. The sculpture on the node as seen dorsally can vary from concentric costulae, with transverse or longitudinal costulae in the middle, or

completely transverse. Costulae transverse on anterior petiolar node face. Brown (1958:321) discusses the differences in size, costulae counts, length vs. width of node, subpetiolar process shape and variability of sculpture on node between the specimens of *G. rastrata* and *G. trigona* he examined. As more specimens became available the gaps were bridged. The petiolar node can be wider than long or the opposite. Size range is HL 0.74–0.90; WL 1.10–1.28 mm.

Specimens Examined.—Brazil, Rio de Janeiro: Jussaral; São Paulo: São Bernardo do Campo; Nova Teutonia, 27°11' S 52°23' W, 300–500m (MCZC).

Gnamptogenys regularis (Mayr)

Gnamptogenys regularis Mayr 1870:965; Mann 1922:3; Brown 1959:229, 319; Kempf 1972:114; Lattke 1990:23.

Gnamptogenys rimulosa var. *splendida* Pergande 1896:871; Brown 1959:229.

Gnamptogenys fiebrigi Forel 1909:253; Brown 1958:229.

Diagnosis.—Declivitous propodeal face abruptly separated from dorsal face, superolaterally with small angulate lobes; metacoxal tooth apically rounded and not triangular; dark brown body, testaceous legs.

Ecology.—J. Longino (pers. comm.) reports observing a short linear column of workers walk to an apparent nest entrance on the ground. He excavated it before any activity had begun and found a small colony of *Pseudomyrmex boopis*. The related *G. horni* has a dietary preference for ants and beetles (Lattke, 1990). One specimen was removed from the stomach of a *Tamandua tetradactylus*.

Comments.—The degree of transverse costulation on the anterior nodal face has traditionally been used to separate this species from *horni*, but as additional material accumulated it became impossible to rely on the character. Transverse costulation can be totally absent or occupy all of the anterior nodal face. Females tend to

have the anterior nodal face totally transversely costulate. This was noted for one specimen by Mayr (1871:965) who concluded it was not normal and that a female with longitudinal costulae would eventually be found. The longitudinal costulae on the sides of the mesosoma do not curve onto the declivitous propodeal face. The type of *splendida* was examined in the CASC.

Specimens Examined.—ARGENTINA, Tintina. BRAZIL, Amazonas: Reserva Ducke, vic. Manaus; Maturaca. COLOMBIA, Magdalena: 4 km N San Pedro, 10°57'N 74°03'W, 550 m. COSTA RICA, Alajuela: vic. Volcán Arenal, 10°29'N 84°44'W, 550 m. Heredia: 10°20'N 84°04'W, 500 m; Península de Osa: Sirena, 8°28'N 83°35'W, 50m; Puntarenas: Res. Biol. Carará, 9°47'N 84°36'W, 500m; vic. Guapiles, Río Toro Amarillo. BRAZIL, Goiás: Anápolis; São Paulo: Holambra; Agudos; Distrito Federal: Deodoro; Amazonas: Maturaca; Minas Gerais: Carmo da Cachoeira; Bahia: Salvador. ECUADOR, Pichincha: Río Palenque, Centro Científico; Santo Domingo de los Colorados; Pichilingue: Los Ríos. GUIANA, (NY Quarantine Stn.). MEXICO, Tepic; Veracruz: 10 km NNW Sontecomapán, 200m. PERU, Tingo María: Valle del Monsón; Junín: Colonia Perene, Río Perene, 18 km NE La Merced; Puerto Maldonado, 260 m. VENEZUELA, Sucre: El Rincón, 10°36'N 63°12'W, 100 m; Guárico: Hato Masaguaral.

Gnamptogenys reichenspergeri (Santschi)

Acanthoponera (*Anacanthoponera*) *reichenspergeri* Santschi 1929:274.

Gnamptogenys reichenspergeri (Santschi); Brown 1958:324; Kempf 1972:114.

Diagnosis.—Head in frontal view with concave vertexal margin, vertex smooth and shining; anterior face of postpetiole and median disc of gastric tergum II smooth and shining; metacoxal spine ab-

sent and declivitous face of propodeum with small superolateral lobes, spiracles lateral and not elevated; metanotal suture absent.

Ecology.—From leaf-litter samples of humid forests.

Comments.—A rarely collected ant, its nearest relative is apparently *relicta*.

Specimens Examined.—BRAZIL, Jussara: Angra dos Rios (MCZC). VENEZUELA, Amazonas: Cerro Ya-pakana (LACM).

Gnamptogenys relicta (Mann)

Rhopalopone relicta Mann 1916:403.

Holcoponera relicta (Mann); Brown 1957:491.

Gnamptogenys relicta (Mann); Brown 1958:229; Kempf 1972:114; Wheeler & Wheeler 1975:119.

Diagnosis.—Mandibles, vertex and anterior postpetiolar face smooth and shining, occiput sometimes with very faint transverse costulae; last 3 antennal segments form vague club; declivitous propodeal face with transverse costulae, propodeal spiracles elevated above rest of cuticle; pronotal suture present but fine, metanotal suture well impressed, breaking sculpture; no anterolateral lobes on declivitous propodeal face; metacoxal spine present.

Ecology.—Sifted from leaf litter in rain forests.

Comments.—The degree of effacement of sculpture, and size can vary considerably. S. Cover reports a specimen from the N. Range of Trinidad.

Specimens Examined.—BRAZIL, Amazonas: Rio Taruma, High Falls; Benjamin Constant; Ponta Negra, N of Manaus; 66 km N Manaus on Carcari road. COLOMBIA, Amazonas: 7 km N. Leticia. SURINAM, Raleigh Vallen-Voltzberg Res., Voltzberg Camp, 90m. VENEZUELA, Bolívar: 49 km ESE Tumeremo, 7°28'N 61°06'W, 200 m.

Gnamptogenys rimulosa (Roger)

Ponera rimulosa Roger 1861:18.

Gnamptogenys rimulosa (Roger); Brown 1958:324; Kempf 1972:114.

Diagnosis.—Mandibles with small basal patch of costulae, rest smooth and shining; metacoxa with broad, basal lobe; petiolar node longitudinally costulate throughout; postpetiolar sternum smooth and shining.

Ecology.—Unknown.

Comments.—This species seems to be particularly close to *G. regularis*. Even though *regularis* workers lack the small laterobasal costulate area on the mandibles, females have it; there is a slight depression of the posterior mesosomal dorsum, vestigial propodeal lobes and totally longitudinal costulae on the node.

Specimens Examined.—BRAZIL, Santa Catarina: Nova Teutonia: 27°11'S 52°23'W, 300–500m.

Gnamptogenys schmitti (Forel)

Emeryella schmitti Forel 1901:334; Wheeler & Wheeler 1952:127.

Emeryella schmitti minor Wheeler 1936:195; Brown 1958:229.

Gnamptogenys schmitti (Forel); Brown 1958:330; Kempf 1972:114.

Diagnosis.—Very broad head, in frontal view, and striking elongate mandibles without denticles; striae on anterior nodal face transverse, slightly effaced laterally; striae on metanotum and propodeum transverse; gastric sternum II smooth and shining.

Ecology.—A predator of millipedes whose range has shrunken considerably this century due to massive deforestation on Hispaniola.

Comments.—This species represents an extreme in the development of falcate mandibles within the genus (Brown 1958:215), but probably represents a development independent of the *banksi* subgroup species. The type series in the MCZC was examined.

Specimens Examined.—HAITI, Diquini.

Gnamptogenys semiferox Brown

Gnamptogenys semiferox Brown 1958:324; Kempf 1972:114.

Diagnosis.—Body with abundant coarse punctation, especially on head; mandibles with about six denticles and projecting basal lobe; anterior clypeal margin convex; declivitous propodeal face longitudinally costulate.

Ecology.—A millipede hunter known from rain forests between 900–1200 m on Hispaniola. Also suffering from habitat shrinkage due to deforestation.

Comments.—Even though it shares the lack of metacoxal spines and elongate mandibles with *schmitti*, it does not seem to be closely related to it. Its mandibles are different, including in cross section: shining and longitudinally rugulose, as opposed to opaque and striate in *schmitti*.

Specimens Examined.—DOMINICAN REPUBLIC, Mt. Diego de Ocampo, 3–4000 ft (Paratype).

***Gnamptogenys siapensis* Lattke,**
new species
(Figs. 62, 63)

Type Material.—Holotype worker. VENEZUELA, Amazonas: Alto Río Siapa, 1°40'N 64°35'W, 600 m, 4-II-89, J. Lattke, leg. Sifted leaf litter sample. The specimen was caught in an area occasionally flooded during the rainy season. Deposited in MIZA.

Worker.—HL 1.13; ML 0.44; HW 1.00; ED 0.25; SL 0.97; WL 1.60 mm; CI 0.89; SI 0.97; OI 0.25.

Cephalic dorsum with fine longitudinal costulae; eyes placed behind midlength; clypeal lamella anteriorly straight and laterally bluntly angulose; mandibles smooth and shining, subtriangular with apical and basal margins joined through broad convexity; scapes smooth and shining, surpassing vertexal margin, antennal bullae partially visible beneath frontal lobes; costulae longitudinal throughout mesosomal dorsum, propodeal declivity and petiolar node; promesonotal and mesometanotal sutures weakly impressed; mesometapleural suture well impressed; petiolar node more or less as long as wide, in lat-

eral view subquadrate; subpetiolar process subquadrate, with angulate ventral corners; postpetiolar sternum medially smooth and shining and with lateral longitudinal costulae; tibiae and femora smooth and shining; metacoxae with basal triangular lobe, dorsally transversely costulate and laterally mostly smooth and shining; abundant long suberect and subdecumbent hairs on body. Color ferruginous.

Queen, Male.—Unknown.

Discussion.—This species is quite near to *lucaris* and the differences between the two species may be infraspecific: in *lucaris* the petiolar node dorsum is evenly convex, the metacoxal tooth is broadly triangular and the subpetiolar process has acutely pointed angles. Due to the great differences that separate the range of the two species, the apparent endemicity of some *Gnamptogenys* to southern Brazil, and the scarcity of material, it seemed prudent to separate the forms until more specimens are available.

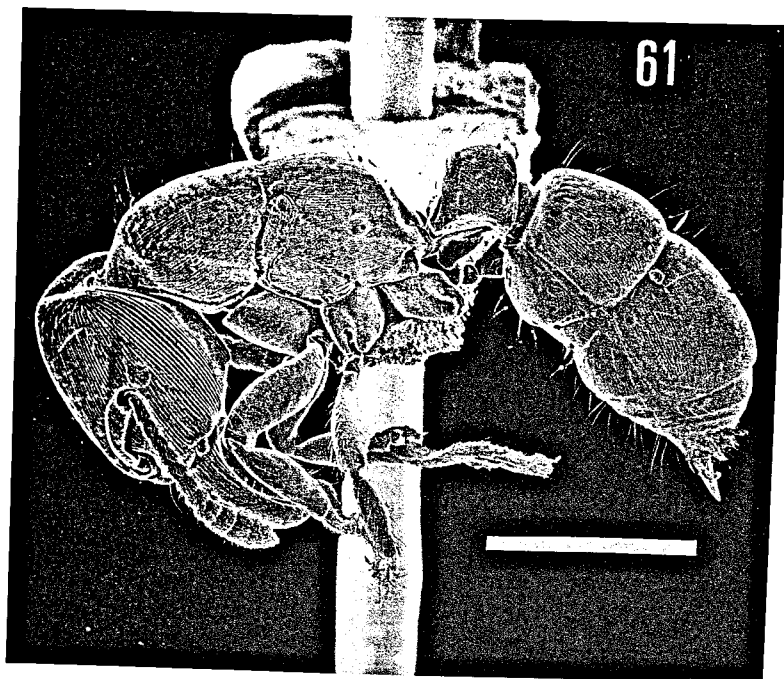
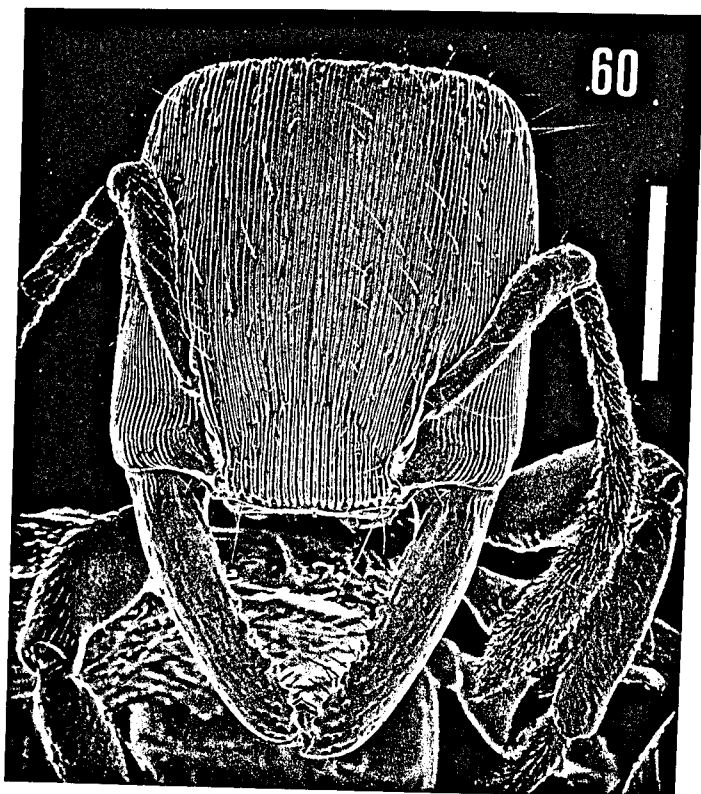
Etymology.—The species name alludes to the type locality.

***Gnamptogenys stellae* Lattke,**
new species
(Figs. 60, 61)

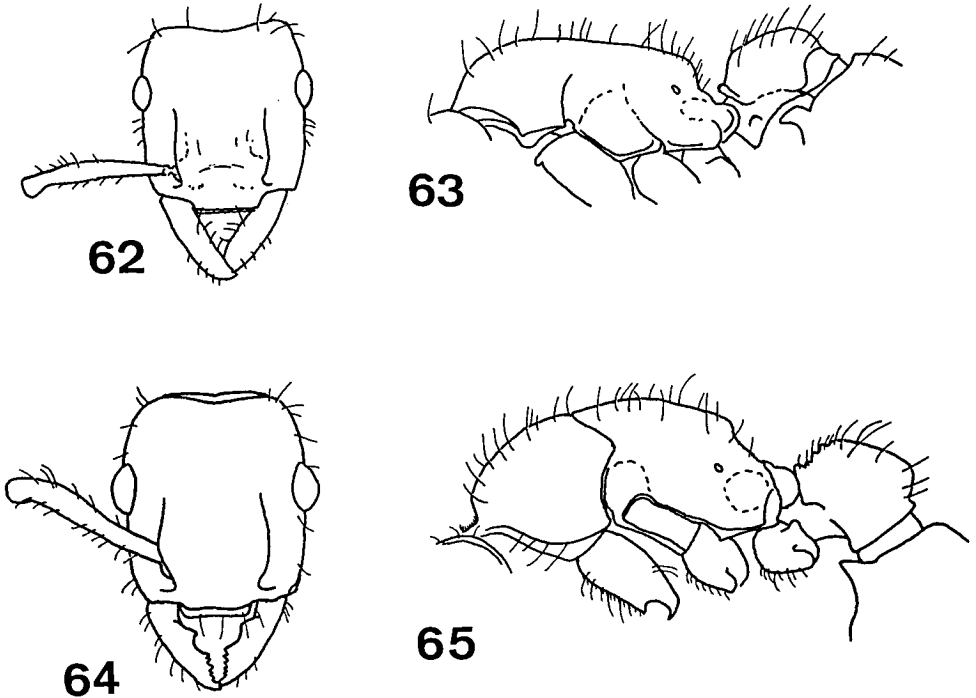
Type Material.—Holotype worker. COSTA RICA, Estrella Valley, April, 1924, W.M. Mann, leg. Deposited in USNM.

Worker.—Holotype measurements: HL 1.18; ML 0.57; HW 1.06; SL 0.65; ED 0.13; WL 1.55 mm; CI 0.90; SI 0.61; OI 0.12.

Head elongate, in frontal view with concave vertexal margin, more or less parallel sided with eyes at about midlength; clypeal lamella gradually projects forward from sides and is medially weakly emarginate; mandibles almost linear and with a double row of low tubercles on apical border, dorsally and laterally smooth and shining with sparse punctae, basally with small area of longitudinal costulae; scapes smooth and shining, dorso-ventrally compressed, bent at basal one-fourth and



Figs. 60-61. Micrographs of *G. stellae*. 60, head, scale bar = 0.5 mm; 61, body, scale bar = 1.0 mm.



Figs. 62–65. Frontal view of head and lateral view of mesosoma and petiole. 62–63, *G. siapensis*; 64–65, *G. volcano*.

thickest just apicad of midlength; cephalic dorsum with longitudinal striae, diverging posterad at vertex, gula mostly longitudinally striate, weakly diverging posterad; occipital margin glabrous.

Anterior pronotal face and collar with transverse striae; longitudinal striae on mesosomal dorsum and propodeal declivity, slightly shallower on metanotum and dorsal propodeal face; promesonotal suture very lightly impressed, metanotal groove markedly impressed and interrupting longitudinal striae. Mesosomal sides longitudinally striate, except for oblique striae on anepisternum; propodeal spiracle round and slightly raised above rest of integument; procoxae anteriorly and anterolaterally smooth and shining, posterolaterally striate; mesocoxae with dorsal transverse striae that are effaced posteriorly; metacoxae with transverse striae and low dorsobasal swelling; tibia and femora smooth and shining; anterior

petiolar node face smooth and shining, laterally with weakly effaced longitudinal striae, dorsally diverging posterad; node wider posterad than anterad; petiole in lateral view slightly pedunculate, anteriorly slightly concave, dorsally slightly convex, posterior face dropping sharply; subpetiolar process anteriorly projecting with convex anterior border and posteriorly sinuous; gastric terga I and II with longitudinal striae, effaced towards posterior margin of tergum II. Gastric sternae I and II smooth and shining; pilosity sparse, a row of stout hairs present along apical mandibular order, few standing hairs on posterior cephalic dorsum, pronotum and gaster. Body reddish brown; mesosomal dorsum and head darker brown, leg and antennae ferruginous.

Queen, Male.—Unknown.

Discussion.—The median anterior projection of the clypeal lamella is unique among the extant species of the mordax

group. This species seems to occupy an intermediate position between *G. continua* and *G. horni*. The combination of clypeal configuration, small eyes, subfalcate mandibles, glabrous occiput, mesometanotal suture and very brief petiolar peduncle point to this placement.

Etymology.—The species epithet is derived from the Latin word for star, *stella*, and alludes to the type locality.

Gnamptogenys striatula Mayr

Gnamptogenys striatula Mayr 1883:32; Marn 1916:404; Brown 1959:327; Kempf 1970:325; Kempf 1972:115; Kempf 1976:52; Lattke 1990:23.

Holcoponera curtulum Emery 1896:47; Forel 1899:7. NEW SYNONYMY.

Holcoponera obscurum Emery 1896:48; Luederwaldt 1926:238; Santschi 1929:442.

Holcoponera curtula var. *stolli* Forel 1899:7; Brown 1958:228.

Holcoponera brasiliensis Emery, 1902:181; Brown, 1958:229.

Holcoponera striatula obscura var. *angustiloba* Forel 1908:341; Luederwaldt 1926:237; Brown 1958:229. Unavailable.

Holcoponera striatula obscura var. *simplicoides* Forel 1908:341; Luederwaldt 1926:328. NEW SYNONYMY. Unavailable.

Holcoponera striatula obscura var. *angustipleura* Forel 1908:342; Brown 1958:229. Unavailable.

Holcoponera curtula var. *paulina* Forel 1908:342; Brown 1958:229.

Holcoponera curtula var. *vollenweideri* Forel 1912:33; Santschi 1929:453; Brown 1958:229.

Holcoponera striatula (Mayr); Luederwaldt 1926:237; Santschi 1929:442; Wheeler and Wheeler 1952:123.

Holcoponera striatula var. *antillana* Santschi 1929:444; Brown 1957:490.

Holcoponera rustica Santschi 1929:446. NEW SYNONYMY.

Holcoponera wheeleri Santschi 1929:448. NEW SYNONYMY.

Holcoponera brasiliensis var. *pernambucana* Santschi 1929:452; Brown 1958:229.

Holcoponera brasiliensis var. *calcarata* Santschi 1929:452; Brown 1958:229.

Holcoponera brasiliensis var. *mayri* Santschi 1929:453; Brown 1958:230.

Holcoponera brasiliensis simplicoides Santschi 1929:45.

Holcoponera brasiliensis simplicoides var. *hybrida* Santschi 1929:455; Brown 1958:229. Unavailable.

Holcoponera emeryi var. *recta* Santschi, 1929:465; Brown, 1958:229. NEW SYNONYMY.

Holcoponera regularis arcuata Santschi 1929:457; Brown 1958:227; Kempf 1972:112. NEW SYNONYMY.

Holcoponera regularis Santschi 1929:457 (nec Mayr 1970); Brown 1958:227.

Holcoponera wasmanni Santschi 1929:466. NEW SYNONYMY.

Holcoponera wasmanni var. *isthmica* Santschi 1929:467.

Gnamptogenys arcuata (Santschi); Brown 1958:227, 237; Kempf 1972:112.

Gnamptogenys curtula (Emery); Brown 1958:227, 327; Kempf 1972:112.

Gnamptogenys simplicoides (Santschi); Brown, 1958:229, 327; Kempf, 1972:114.

Gnamptogenys rustica (Santschi); Brown, 1958:229, 327; Kempf, 1972:114.

Gnamptogenys wasmanni (Santschi); Brown 1958:229, 238; Kempf 1972:116.

Gnamptogenys wheeleri (Santschi); Brown 1958:230, 238; Kempf 1972:116.

Diagnosis.—Pronotal costulae semicircular; dorsoposterior mesosomal costulae longitudinal and slightly diverging caudad; mesometanotum sometimes with semicircular costulae; triangular metacoxal teeth; body dark brown.

Ecology.—A generalist epigaeic forager of humid forests. See Lattke (1990). A mite was found on the anterolateral petiolar side of one specimen from Beni, Bolivia.

Comments.—This widespread, common, and fairly variable ant has been the object of a lengthy synonymic list. Most of the names were based upon differences in size, gauge of costulation, and the shape of the subpetiolar process and the mesopisternal lobe. These size differences are all normal for the species. One can recognize coarsely costulate and finely costulate specimens, as well as intermediate forms. The finely costulate ants can be found in several places: s. Brazil, Argentina, Guai-

na, Costa Rica, Jamaica and Hispaniola. Occasional series can be found that have transverse costulae on part or all of the propodeal declivity; this condition is not frequent on the finely costulate forms. Several series from Bolivia have a long anterior slope of the node, which approaches the condition in *pleurodon*. The use of the subpetiolar process in the separation of species is of limited value as a variation from subquadrate to anteriorly projecting lobe can be found in series from the same population or even nest. Brown (1957:489) already discussed the futility of using the mesepisternal lobe.

Specimens determined as *G. curtula* by Brown for the 1958 revision are *G. striatula*, and so are several specimens determined as *H. wasmanni* var. *isthmica*. Specimens labelled as type series of *H. emeryi recta* were studied in the USNM and found to be conspecific with *striatula* and not with *G. pleurodon*. I was able to examine two *G. striatula* syntypes in the BMNH. Bill Brown generously shared the notes he took during his study of the following Santschi types in 1963: *H. regularis*, *H. regularis* v. *arcuata*, *H. rustica*, and *H. wheeleri*. He concluded that they are all the same species. He also wrote that these specimens plus additional types and specimens he studied (*H. striatula* v. *antillana*, v. *angustipleura*, *H. wasmanni*, *H. wasmanni* v. *isthmica*, *H. brasiliensis* v. *calcarata*, v. *mayri*, *H. curtula* v. *paulina* (det. Santschi)) perhaps could be separated into two species using the subpetiolar process. But as already has been mentioned, this process has proven to be an unreliable character for species determination in this group.

Material Examined.—ARGENTINA, Salta: El Rey; Misiones: Puerto Iguazu. BOLIVIA, Beni: Blancaflor. BRAZIL: Pará: Tucurul; São Paulo: Reserva Caraguatatuba, 40–80 m; Rio Grande do Sul: Caixa do Sul, Nossa Senhora da Saúde; Ceará: Maranganape Mts. COLOMBIA, Meta: Reserva La Macarena, Río Guayabero, 270m; Quebrada Chirijara, Villavicencio, 1400m;

Cundinamarca: 81 km de Bogotá; Fusagasugá; Valle: Sevilla; Cali, 90m. COSTA RICA, Hacienda La Pacifica, 50m; Limón: Finca La Lola, Siqueres; Heredia: Finca La Selva; Puntarenas: 6 km SW Monteverde, 10°16'N 84°50'W, 900m. DOMINICAN REPUBLIC, Clarke Hall. ECUADOR, Napo: Limoncocha, 250m; Sushijindi: Sucúa: 1500m. JAMAICA, St. Ann, Cedar V., 760m; Westmor. bog, 460m. EL SALVADOR, 6,4 Km N Quetaltepec. MARTINIQUE, (no other data). MEXICO, María Madre; Michoacán: 8 km SW Tiquicheo, 430m; Consequina slope; Sinaloa: Mazatlán; Veracruz: Lago Catemaco, 250m; 5 km S Cuernavaca; Chiapas: 8 km NE Huixtla, 225m. PERU, Panguana, 9°37'S 74°56'W, 220 m; Puerto Maldonado, 260m. PUERTO RICO, 49 Carr. 186, km 13.2, Río Grande, Humacao. VENEZUELA, Amazonas: Alto Mavaca, 2°01'N 65°07'W, 200m; Táchira: Las Cuevas, 7°48'N 71°46'W, 200 m.

Gnamptogenys strigata (Norton)

Holcoponera strigata Norton 1871:4.

Holcoponera concentrica Mayr 1870:964; Emery 1891:167.

Holcoponera simplex Emery 1896:46; Kempf and Brown 1968:90.

Holcoponera satzgeri Forel 1908:39; Brown 1957:490.

Holcoponera simplex spuria Forel 1908:39; Brown 1957:490.

Holcoponera simplex foreli Santschi 1929:460; Brown 1957:490.

Gnamptogenys simplex (Emery); Brown 1958:229.

Gnamptogenys strigata (Norton); Brown 1958:329; Kempf 1958:115; Kempf and Brown 1968:90; Kempf 1972:115; Billen 1986:168.

Diagnosis.—Roughly costate; anterior postpetiolar surface fairly flat and with 3–4 transverse costae; abundant long, subdecumbent and suberect hairs on body.

Ecology.—A dweller of wet montane transandean forests, commonly taken in leaf litter samples.

Comments.—Aside from aspects covered by Kempf & Brown (1968), other charac-

ters that vary are the size of the propodeal spiracle, costulation of the propodeal declivity and the shape of the node.

Specimens Examined.—COLOMBIA, Valle: Pance, 1700m; Reserva Forestal de Yotocó. COSTA RICA, Monteverde: 1520m; Puntarenas: 1300–1580m; Alajeula: Río Peñas Blancas, 800–880m; Heredia: 17–12 km N Volcán Barba, 880–1420m; San José: 2 km E San Gerardo, 9°27'N 83°43'W, 1440m. GUATEMALA, Sepacuite. MEXICO, Chiapas: Ocosinga; 19 km NW Ocozacoautla, 975m; Veracruz: 5 km N Cuilhuac.

Gnamptogenys sulcata (Smith)

Ectatomma sulcatum F. Smith, 1858:99.

Ponera tornata Roger 1861:15. NEW SYNONYMY.

Gnamptogenys lineata Mayr 1870:965; Brown 1958:229.

Gnamptogenys sulcata var. *cearensis* Forel 1912:33; Brown 1958:229

Gnamptogenys sulcata var. *nitens* Mann 1916:407; Brown 1958:229.

Gnamptogenys ypirangensis Borgmeier 1928:229.

Gnamptogenys sulcata bufonum Weber 1938:208; Brown 1958:229.

Gnamptogenys sulcata (Smith); Brown 1958:329; Kempf 192:115; Lattke 1990:24.

Gnamptogenys tornata (Roger); Mann 1922:3; Brown 1958:319, 329; Kempf 1968:378; Kempf 1972:116; Lattke 1990:25.

Diagnosis.—Mandibles subtriangular; dorsal mesosomal costulae convergent caudad and transverse on declivitous propodeal face; metacoxal tooth absent, at most present as very small tubercle or short lobe; very variable color: mesosoma black to light brown, frequently head, gastric apex and posterior margin of gastric tergum II darker than rest of body. Legs antennae, and mandibles light to dark brown.

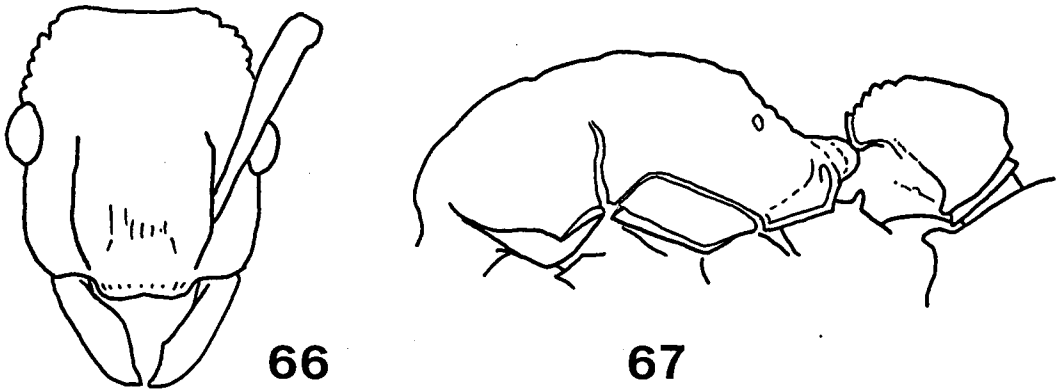
Ecology.—Used as prey by *Dendrobates histrionicus*. See Lattke (1990).

Comments.—Color is of no help in separating the aforementioned forms, except at an occasional local level. Brown (1958) recognized these difficulties and made it

clear the situation would need further study. Variation has been observed in size and shape of the subpetiolar process, mandibular width, and relative size of the eyes. The node can project posteriorly and approach the condition in *acuminata* but does not become acutely pointed. Even though the propodeal declivity is commonly transversely costulate, it can sometimes have oblique or even longitudinal costulae.

I examined the *sulcata* type in the BMNH found it to have transverse costulae on the posterior nodal face. Roger's description includes a key character that points to *tornata*'s synonymy with *sulcata*: "The petiole, as in *rimulosa*, is concentrically costulate, with the smallest circle or oval in the middle of the dorsum, gradually becoming larger." This I have interpreted as meaning that the costulation on the posterior face of the petiole is transverse. My examination of Mann's *nitens* type reveals transverse costulation on the posterior petiolar face, longitudinal costulae on the declivitous propodeal face and very low triangular metacoxal teeth. Borgmeier's *ypirangensis* is described with transverse costulae on the posterior nodal face. Dr. Ivan Löbl of the MHNG kindly examined the *cearensis* type and reported transverse costulae on the posterior nodal face. Dr. Max Fischer of the NHMV graciously examined the types of *lineata* and reported transverse costulation. What could constitute a separate species are specimens from the Amazonas Basin (MUSP) that are black with yellow mandibles and are considerably larger than the average *sulcata*. But in the midst of so much variability it is prudent to await the accumulation of additional evidence before coining a name for a few specimens.

Specimens Examined.—BELIZE, Caves Branch. BOLIVIA, Rosario. BRAZIL, Amazonas: 24 km NE Manaus, Ig. Marianil, Rio Branco Rd.; Independencia: Parahyba; Pará: Rio Xingú (Cachoiera do Espelho); 10 km N Tucuru; Porto Velho: Rio Ma-



Figs. 66–67. *G. transversa*. 66, frontal view of head; 67, lateral view of mesosoma and petiole.

deira. COLOMBIA, Casanare: (no other data); Magdalena: 12 km ESE Minca, 11°08'N 74°06'W, 780m; Parque Tayrona, Pueblito, 300m; Meta: Vista Hermosa; S Villavicencio, Caño El Buque, 480m; Nariño: La Guayacana; Sucre, Est. Primates Inderena; Valle: 64 km E Buanventura, 570m. COSTA RICA, Sirena: Península de Osa, 8°28'N 83°35'W, 50m; Pq. Nac. Braulio Carrillo, 500m; Península de Osa, Pq. Nac. Corcovado, San Pedrillo, 0–100m; Puntarenas: 5 km N Ciudad Neily, 780m; Heredia, 10°20'N 84°04'W, 500m. ECUADOR, Estación Río Palenque; Pichincha: Tinalandia, 16 km SE Santo Domingo de los Colorados. GUATEMALA, Escuintla. HONDURAS, Ola, 18 km NE Catacamas, 370m. MEXICO, Veracruz: Lago Catemaco, 350m; Los Tuxtlas, 10 m NNW Sontecomapán, 200m; trail above Presidio, 305–490m; Córdoba. PANAMA, Barro Colorado. PERU, Tingo María: Yurac, 107 km E Tingo María; Madre de Dios: Est. Biol. Cocha Cashu, 400m; Río Tambopata Res., 20°50'S 69°20'W, 290m; Huanuco: Cueva de la Lechuzas, 6 km W Tingo María María; Cueva de la Boca del Lobo, 710m, 69 km W Tingo María. VENEZUELA, Amazonas: Alto Mavaca, 2°02'N 65°06'W, 250; Río Baría, 0°50'N 66°10'W, 140m.

***Gnamptogenys tortuolosa* (Smith)**

Ponera tortuolosa F. Smith 1858:99.

Gnamptogenys tortuolosa var. *quitensis* Forel 1921:133; Brown 1958:230.

Ectatomma (Gnamptogenys) tortuolosum (Smith); Emery 1896:51; Mann 1916:406; Wheeler and Wheeler 1952:134.

Gnamptogenys tortuolosa (Smith); Brown 1958:230; Kempf 1961:492; Kempf 1970:325; Kempf 1972:116; Lattke 1990:25.

Diagnosis.—Mandibles subtriangular; clypeal lamella laterally angular and medianly straight to softly concave; propodeum with transverse costulae; coxal tooth small sometimes shaped as a short lobe; tibiae, femora and scapes smooth and shining. Piceous body; legs and antennae ferruginous.

Ecology.—Found nesting in rotten wood in humid forests and foraging in grassy or weedy areas.

Comments.—Very constant in sculpture and color.

Specimens Examined.—BRAZIL, Roraima: 64 km S Boa Vista. COLOMBIA, Amazonas: Trocha Buenos Aires; Meta: 8 km w Villavicencio; Mesetas, La Uribe, 720m; Serranía La Macarena. ECUADOR, Sucua. GUIANA, Kartabo; Bartica; Rupupuni: Apoteri, 4°05'N 58°35'W, 100m. VENEZUELA, Amazonas: Alto Río Siapa, 1°05'N 58°35'W, 600m; Alto Río Mavaca, 2°01'N 65°07'W, 200.

***Gnamptogenys transversa* Lattke,
new species
(Figs. 66, 67)**

Type Material.—Holotype worker: PANAMA, Bocas del Toro, Fortuna-Chirigui

Grande rd., 8°47'N 82°12'W, 12/14-VII-78, 1050m, D.M. Olson (523), leg. Premontane rainforest sifted leaf litter. Deposited in MCZC.

Worker.—Holotype measurements: HL 1.30; HW 1.10; ML 0.70; ED 0.28; SL 1.04; WL 1.92 mm; CI 1.18; SI 0.95; OI 0.25.

Head in frontal view with rectangular, elongate head: sides broadly convex, posterior margin slightly concave; clypeal lamella relatively long, medianly slightly concave and laterally rounded; eyes moderately prominent. Costulae on head principally longitudinal, slightly convergent anterad, costulae between eyes and frontal lobes curving into depression laterad of antennal sclerite. Mandibles triangular with blunt denticles and relatively long basal broader, rugulose with piligerous punctae. Scapes shining and slightly rugulose, barely passing posterior edge. Mesosoma dorsally with longitudinal costulae from pronotum to dorsum of propodeum, declivity with transverse costulae; promesonotal suture visible as a brief transverse depression. Laterally with longitudinal costulae throughout. Anepisternal flange well-developed along anterior third; katapisternum well-defined, anepisternum not as well-defined. Petiole laterally subcylindrical, costulae longitudinal/oblique, ventral process is an anteriorly projecting lobe. Petiole in dorsal view wider posteriorly than anteriorly, costulae form concentric arches: transverse in oblique-anterior view and longitudinal in posterior view. Gastric dorsum with longitudinal costulation, postpetiolar sternal disc smooth and shining. Transverse costulae on forecoxa, metacoxa with a parallel-sided denticle with a rounded apex.

Antennae, tibiae, femora with no pilosity, only decumbent to suberect hairs and sparse punctulae. Body brown, legs ferruginous brown.

Female, Male.—Unknown.

Discussion.—This species is very close to *hartmani* but *hartmani* has longitudinal costulae on the propodeal declivity; mostly

smooth and shining mandibles; dorsum of petiole with mostly longitudinal striae; longitudinal striae on the postpetiolar sternum; eyes not as prominent, and scapes with more defined striae and rugulae.

Etymology.—The name alludes to the transverse costulae on the propodeal declivity.

Gnamptogenys triangularis (Mayr)

Ectatomma (*Gnamptogenys*) *triangularis* Mayr 1887:544.

Gnamptogenys triangularis (Mayr); Emery 1905: 113; Kusnezov 1954:34; Brown 1958:323; Kusnezov 1962:236; Brown 1958:230 321.

Ectatomma (*Parectatomma*) *triangularis richerti* Forel 1913:203; Luederwaldt 1926:236; Brown 1958:230 321.

Ectatomma (*Parectatomma*) *aculeaticoxae* Santschi 1921:82; Wheeler and Wheeler 1952:133. NEW SYNONYMY.

Gnamptogenys aculeaticoxae (Santschi); Brown 1958:227, 330; Kempf 1960:390; Kempf 1961: 491; Kempf 1972:116; Deyrup, et. al. 1989:93; Lattke 1990:8.

Diagnosis.—Promesonotal suture weakly impressed; node dorsum with transverse costulae and subquadrate costulae and subquadrate subpetiolar process; first gastric sternum with transverse costulae; metacoxal tooth long and thin. Piceous body.

Ecology.—Millipede feeder found in humid forests. The USA record (Deyrup, et. al. 1989:93) is undoubtedly a recent introduction and they have apparently found prey in the local species of millipedes, as they are well established.

Comments.—The number of transverse costulae on the petiolar dorsum can vary from 8 to 14, and those on the pronotum from 13 to 23. Specimens from Argentina tend to have a higher count but there is no gap separating the values. The length of the coxal teeth is variable and bears no relation to the number of petiolar costulae. Propodeal teeth also show variation from a low mound to the usual low, sharp

teeth. Occasional specimens can have up to 4 transverse costulae on the anterior pronotal face, and rarely longitudinal costulae on the petiolar node. Other traits used by Santschi to separate *aculeaticoxae*, such as degree of impression of the promesonotal suture, gastric constriction and gauge of hairs, length vs. width of petiolar node and the mandibular costulation all show continuous variation that is best described as infraspecific.

Specimens Examined.—ARGENTINA, Tucumán: vic. Horco Molle, 750–900m; Tafecillo; La Cavera; 48 km S Jujuy. BOLIVIA, Huachi: Río Beni. BRAZIL, Espiritu Santo: 4 km W Santa Tereza, Res. Nova Lombardia, 900m; Paraná: Foz do Iguaçu; Sao Paulo: Agudos. COLOMBIA, Magdalena: 3 km SE Minca, 11°08' 74°06'W, 1050m; Pq. Tayrona, Pueblito, 360m. COSTA RICA, Heredia: La Selva; Península de Osa, Pq. Nac. Corcovado, 8°28'N 83°35'W, 0–100m. ECUADOR, Pichincha: 47 km S Santo Domingo, Río Palenque, 215m. GUIANA, Kamakusa. PANAMA, Barro Colorado. PERU, Tingo María: Yurac, 108 km E Tingo María; Puerto Maldonado, 260 m; Panguana, 9°37'S 74°56'W, 220m. USA, Florida: S. Miami. VENEZUELA, Amazonas: Alto Río Mavaca, 2°01'N 65°07'W, 200m.

Gnamptogenys volcano Lattke,

new species
(Fig. 64, 65)

Type Material.—Holotype worker. COSTA RICA, Heredia: 18 km N Volcán Barba, 10°17'N 84°05'W, 800m, 4/14-VII-1986, J. Longino no. 1383–5. Wet forest litter sample. Deposited in LACM. One antenna lacking,

Worker.—Holotype measurements: HL 1.38; ML 0.55; HW 1.18; ED 0.25; SL 1.18; WL 1.93 mm; CI 0.86; SI 1.00; OI 0.21.

Head in frontal view elongate, vertexal margin concave; eyes prominent and situated at mid-length; clypeal lamella relatively long, laterally rounded and medianly concave; mandibles smooth and shining, with prominent piligerous fossae; subtrian-

gular basal angle preceded by a tooth and concavity (or notch); scape when laid back barely surpasses vertexal margin; mesosomal dorsum with longitudinal costulae and propodeal declivity with transverse costulae, in dorsal view the costulae arch posterad and become longitudinal; gaster with longitudinal costulae, including postpetiolar sternum, weakly effaced anteromedianly; metacoxae with dorsobasal tooth, dorsally with transverse costulae and laterally mostly smooth and shining; subpetiolar process with no posterior heel; tibiae and femora smooth and shining. Body with numerous standing golden hairs; body brown, legs and antennae reddish brown.

Queen, Male.—Unknown.

Discussion.—*Gnamptogenys volcano* is close to *sulcata* but the latter can be recognized by the longitudinal costulae on the propodeal declivity, broader head, rounded mandibular basal angle with no tooth and the straight clypeal lamella with acutely angulate sides. The structure of the clypeal lamella, mesepisternum, and mandible make this a striking species within the *sulcata* group.

Etymology.—The name of the species comes from the latin word for volcano, as the type locality is near the Barbas volcano.

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